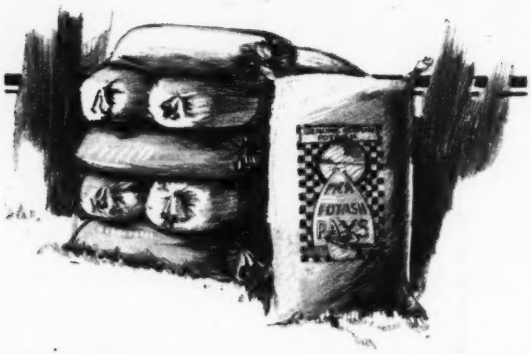
Better Crops

The Pocket Book of Agriculture

August 1924 10 Cents.

In this issue—Dr. T. C. Atkeson—G. I. Christie—L. E. Call
—Firman E. Bear—W. C. Etheridge—T. A. Kiesselbach



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Better Crops

The Pocket Book of Agriculture

VOLUME II NUMBER SIX

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It's the Life!

Better Crops

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¶In which Jeff mingles some old and some new thoughts on

SYSTEM

By Jeff McDermid

THIS is not an advertisement for A. W. Shaw; for System is not only a magazine; it is a thing. System is the cord upon which we string the beads of events—the thread which leads us through and out of the labyrinth of the day's work and the maze of a life's accomplishment.

System is generally thought of as a plan through which the efforts of many may be concentrated, focussed and directed toward a single purpose. Like the salesman who, kicked down the stairs from the sixth floor of a building, was grabbed by a party on the fifth floor and kindly aided on the seat of the pants to the fourth. At each floor a husky pair of Number Nine-E Regals planted themselves on his weak-end and when he found himself on the street he gasped, "Gee whiz! What a system!"

But individuals need system.

Without it, events shape their own course—and Destiny waits behind a bush to throw cockleburs in our hair. Show me where a man works, or tell me how he works, and I'll tell you who he is and what he will be.

NO great thing was ever accomplished without system, for system is only a plan, and the working of the plan. And there is the trouble with most systems: they are

not worked. System in itself is nothing. As a house is not a home, so a system is not success until it is lived with, warmed with the fond breath of human personality, and injected with the arsenic of action.

Many systems are streaks of rust which point to the horizon, but upon which no trains run.

YESTERDAY I visited the president of a big company.

Proudly he showed me through the plant and back to the office. Here, amidst a marvellous array of sparkling desks, shining file-drawers and slick office machinery he explained "the system." "The girls take each incoming whosis and enter the number on these pink cards. The cards are punched in the upper left hand corner if the dufunny is not hijaculated; but in the right hand corner if it is. Then we draw off the bidiccum numbers and they go on through 'the system' as a followup. Each order has a number. And this order goes to the shipping room and is printed on the outgoing entry—(or the incoming outgo, I forget which.) Then the record clerks by-pass the allotment serial number and it goes to the adding machine."

His eyes shone with pride. Each desk had a polished glass top. Thousands of dollars were in evidence in the form of vari-colored celluloid index cards and tags. Records swung on easels, in drawers, in neatly stacked books. Marvellous!

"And who is that dirty, tousle-headed, old man over there in that dark corner at the littered and battered old roll-top desk," I asked.

"Oh, he? Why he's been with the company forty years. When I want to know anything about an order or the location of a shipment I ask him. He always knows!"

And there you are!

A system must be worked, and worked by a human being with a brain, a keen sense of the value of time, and the exasperating uselessness of non-essentials.

A system is a combination of a blue print and a schedule—the blue print to tell how and where and the schedule to tell when. But lay the blue print and schedule on an acre of ground and no church will spring miraculously into being. Men must come, and dig, and hew, and sweat and struggle, and cuss, and laugh—and stop occasionally to draw sweet, cool draughts of water from the shiny tin pail.

Or gather your men, and let them dig and hew and sweat with no blue print or schedule to guide them and, though something will eventually take form, you will never recognize it as a cathedral, nor will it be completed in time to be of any use.

So then, a system is valueless without men who will work it, and hew to the line in so doing; and men's labor comes to naught when no system is followed. The combination is the thing.

THINGS lie in this world in the raw state. Our lives are a series of decisions—selections from the mass. We choose this instead of that. All things are a matter of selection. This sentence is merely a selection from the twenty six letters of the alphabet, strung together according to a system we both understand. Without this system my sentence would be a hodge podge, and my thought hidden in a cloud of indecipherable hieroglyphics.

Harmony in music is merely selection from raw sounds, plus system in grouping the notes. The artist with a system, takes color in the mass, and daubs a bit here and there—a cow! or a Mona Lisa, depending upon the skill with which the system is worked.

Our selections should be the result of system.

"Shall I be a banker, butcher, or baker?"

"Shall I stop in on the way down

(*turn to page 62*)

The Unseen Factor

By Earl P. Robinson

County Agent Leader, New Hampshire Agricultural Extension Service

Your success depends a lot upon the unseen factor in agriculture. Out of a wide experience, Mr. Robinson explains what it is and how it operates.

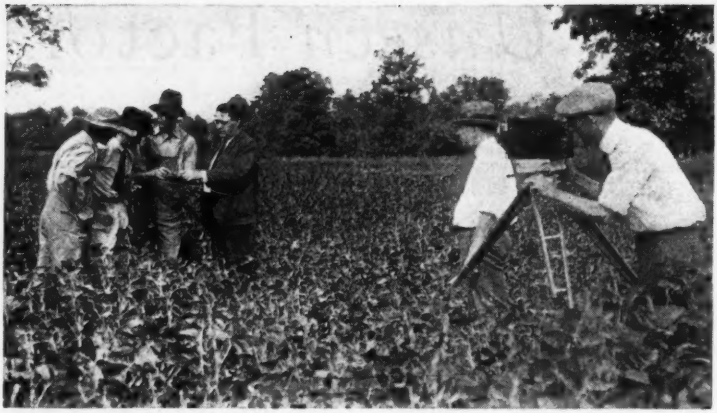
THE average man considering the purchase of a farm, centers his attention on the farm itself. Are the fields fertile, well drained, reasonably free from weeds and fairly level? Is the soil adapted to a variety of crops? Are the buildings adequate to his needs, in good repair and pleasing in appearnace? Are the fences satisfactory? Is there a sufficient supply of good water? Some men would not overlook the advantage of a woodlot for fuel supply or trees for shade and shelter. Outside of the farm itself, the distance to school, church and market, and the condition of the roads generally receive consideration.

If our home-seeker stops there he has overlooked a matter of as great importance as the farm itself. And that is the spirit of the community in which he expects to make his home. So great a factor is this that it may make or break a man, and in the event of success may rob him of the best fruits of his victory. It is possible for an able leader—a man of vision with deep faith and unflinching courage—to forge ahead in spite of an unfavorable spirit in the community, and he may even change the community to a progressive and helpful attitude, but the average man is engulfed in such a sea of indifference, or discouraged and beaten by the flood of criticism and unsympathetic comment.

Yes, there is a choice of communities as well as of farms. In some you find a spirit of pessimism, —"It can't be done" attitude. Every proposal for improvement is greeted with such remarks as, "They may do these things elsewhere, but you can't do them here," "You can't get anybody to stick here," "No use trying, everything we've undertaken here has gone to the dogs," etc., etc., ad nauseam.

OR another kind of community you find is where an extremely selfish attitude prevails. It is every man for himself and a feeling of distrust toward others. There is little confidence in the teachings of science and often scant courtesy toward those serving in fields of investigation and teaching. In such communities every departure from traditional methods is greeted with ridicule. A man trying a new variety of corn which proves late for the locality will find his neighbors expressing their interest by such remarks as, "Well, John, I reckon you need an extension on the season for that new fangled corn of yours." Or making a trial of alfalfa his enterprise is rewarded, perhaps, by such comments as, "Better see if the county agent can't come over and nurse your alfalfa through the winter; he hasn't

(*turn to page 63*)



Filming a county agent demonstration in the field.

FILM FARMING

By Frank George

U. S. Department of Agriculture

THE Secretary of Agriculture donned his flowing robes, adjusted his turban, took a final satisfied look in the mirror, and seated himself on the deep-cushioned couch. In an opposite corner several chiefs of bureaus were being "made up" for their part in the Department's latest "all-star-cast" super-film production.

Oh no! this is not an actual scene, yet many of the Department's leading scientists and personnel on occasion have willingly abandoned their bugs and bacteria temporarily to take part in the films that carry the message of better agriculture via the silver sheet. Enthusiasm runs high in the Department over the results of the movie work.

More than 200 agricultural pictures have been made by the Department, and recently a modern movie studio has been built in Washington, where 24 pictures a year will be produced. The films are intended primarily for the use of extension and field workers of the Department and of officially cooperating institutions, and have been an important factor in the campaigns for the eradication of plant and animal diseases and in encouraging the use of scientific production and marketing methods.

ONE picture, "Behind the Breakfast Plate" has been shown all over the world to a combined audience estimated at more than 250,000,000 people. "Out of the Shadows," the most popular picture that the Department has ever produced, has been shown in every county in the United States. This

is a film on animal tuberculosis eradication as woven into a story of how Mary Benton contracts tuberculosis by drinking the milk of a diseased cow on her father's farm, the destruction of the herd, its replacement by an accredited herd, and of Mary's ultimate recovery.

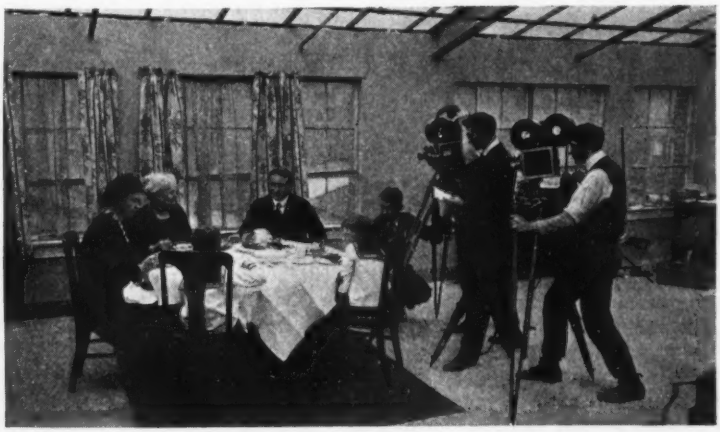
"Clean Herds—and Hearts," one of the Department's more recent productions, designed to replace "Out of the Shadows," is a conventional four-reeler that puts across the message of tuberculosis eradication in a dramatic story of mother love and local politics. The Mayor seeking re-election is persuaded by his daughter to extend the mortgages he holds on neighboring farms to enable the farmers to replace their herds with accredited tuberculosis free animals, and the election is won.

LITTLE was known ten years ago of motion picture technique and plot construction in effectively presenting agricultural subjects, but as the Department's motion picture staff gained experience the pictures got out of the flicker-film class and the subjects were handled with a finesse that competes favorably with the commercial film product. The pictures are continually used on the large city theatre circuits as well as in rural communities, and are doing much to induce in city people a real appreciation of agricultural problems.

The new studio of the Department employs every modern device in picture-making,—speed cameras for taking slow-motion pictures, cameras for microscopic work, rapid-developer tanks, drying drums, print racks and the like. A staff of stage carpenters can build on short notice any setting from a farm-house interior to an entire village. The scenes are "shot," negatives developed, prints made, titles inserted, —all in incredibly short time. The Agricultural Hollywood of America, the studio has been called.

It has been learned that to gain the attention of a wide audience the educational pictures must be presented in story form. Thus the message of proper wool handling and cooperative selling is brought out in a picture entitled "The Golden Fleece" in which Jason, a

(*turn to page 58*)



A studio scene in a cranberry story. The gentleman with obvious designs on the turkey is Dr. Homer L. Shantz in charge of Plant Physiological and Fermentation Investigations.

How Can We Raise WINTER

By *Firman E. Bear, L. E. Call, G. I. Christie, W. C. Etheridge, T. A. Kiesselbach, H. W. Warner and H. E. Young*

THIS is the question that is uppermost in the mind of every wheat grower. A great many of our readers are pondering over it. I thought you would be interested in hearing what the leading authorities in the big winter wheat states had to say on this subject so I asked several of them to answer this question. Here are seven short and snappy articles that are well worth your perusal.

It should be borne in mind that in most instances the writer was thinking primarily of conditions in his own state but in each contribution you will find some valuable advice, whatever your section of the country.

Jeff

L. E. Call

Agronomist
Kansas Experiment Station

THERE are two ways by which the returns from wheat production may be increased. First, by producing wheat of better quality and, second, by increasing the acre yield of the crop by means of well planned rotations, timely tillage and judicious fertilization. Fortunately, those practices that increase yields usually produce grain of better quality.

Under present international conditions, wheat will remain an unprofitable crop in this country as long as we continue to produce a surplus of grain of poor quality. The American people demand white, light, fluffy bread, The baker, in order to satisfy this demand, must have flour of high gluten content that makes a strong dough that will stand hard, rapid working in power mixers. The miller, in order to produce flour of this character, must have wheat of high protein content. The American miller will pay a premium for such high quality wheat, but will not use low grade wheat at any reasonable price. This low grade grain, rejected by our millers, makes up a large part of our wheat exports. One hope, therefore, of a better price for wheat lies in our ability to produce grain of better quality.

WHEAT

Profitably?

The premium that has been offered in the past for wheat of good quality as compared with less desirable grain is well shown by comparative prices for No. 2 hard wheat at the Kansas City, Missouri, market during the past thirty-one years. In this period the average top price of choice dark hard wheat has been $1.15 a bushel while the average low price for the best yellow hard wheat of the same grade has been $1.00 a bushel.

THE future looks especially bright for those farmers in subhumid and semi-arid sections of the United States where dark hard wheat of high protein content can be produced, providing they will adopt the methods and take the care necessary to produce grain of this quality. The urgent demand for such wheat at this time is well shown by the fact that an import duty of thirty cents a bushel was paid on fourteen million bushels of high quality Canadian wheat imported into this country between July 1st, 1923 and June 1st, 1924. Small quantities have continued to come in since the import duty was raised to forty-two cents a bushel. Better quality grain points the way to greater profit in wheat production.

Grain of good quality cannot be produced economically where wheat is grown year after year upon the same land, where late plowing or poor tillage methods are practiced, or where such a large acreage of wheat is grown that the crop cannot be harvested promptly, stacked, or threshed under favorable conditions, and stored in such a way as to prevent damage from moisture and insects.

There is often a definite relation between good quality and low yield because those climatic conditions which favor high yield tend to reduce the protein content. Fortunately, however, those methods of culture necessary to produce a high yield per acre in most of the wheat belt also tend to produce grain with high protein content and excellent quality.

At the Kansas State Agricultural College, a good rotation of crops including alfalfa, not only greatly increased the yield, but also increased the protein content of the wheat from fourteen to eighteen per cent. At the same institution, the best early methods of preparing ground for wheat increased the yield ten bushels an acre and the protein content of the grain by two and three tenths per cent, when compared with the poor methods of soil preparation often used in wheat production. Increases in yield and improvement in quality

brought about in this way are produced at very small expense and are the surest means of making wheat growing profitable.

G. I. Christie

Director
Indiana Experiment Station

REDUCED cost of production and an increased price will make winter wheat production profitable. There must be a reasonable margin between the cost of production and the price received by the farmer. There must be an improvement over present conditions.

The price of wheat is dependent upon many factors beyond the control of the individual farmer. It is hoped that through a better marketing system and a better balance between supply and demand, a reasonable and fair price for wheat may be secured.

Many factors which influence the cost of production of wheat are within the control of the farmer. He must assume the responsibility for these, and should make every effort to secure a crop of wheat at the lowest possible cost.

Farmers should grow the variety of wheat demanded by the market. Too many unsatisfactory varieties of wheat are now grown and bring a low price. In Indiana, Illinois, Ohio and other similar territory, there are several hundred local flour mills. Many of these mills are now demanding a hard wheat, rich in gluten, which will make a flour satisfactory for bread.

IN Indiana the Michikoff wheat has been developed, and millers are paying a premium of ten to twenty-five cents per bushel for this variety. This is a hard winter wheat, and yields a flour which is used in a satisfactory way by bakers in the making of bread. In other sections the soft winter wheat varieties, such as Rudy, Michigan Amber, Farmer's Friend, Harvest King, Fultz and Poole, are demanded for a special trade. The needs of the local market should be considered and met.

Fertilizers can be used with profit. Results from six experimental fields in Indiana covering five to eighteen years, show an increased yield of 7.3 bushels of wheat per acre where complete fertilizer was used. These

This photograph and the one on the next page were taken on the farm of Ed. Hushaw, Rossville, Vermillion County, Illinois. They illustrate what can be done by efficient management of the soil.

fields received an application of 200 to 300 pounds per acre of a 2-8-4 fertilizer.

Good farming demands that rotations including legumes be followed in the regular way and that the manure of the farm should be conserved, together with all crop residues and returned to the land, in order that the organic matter supply of the soils may be maintained and increased. The legume crops will also supply the bulk of the nitrogen.

The practice of top dressing wheat with manure or straw during the winter is to be recommended. In this way not only will plant food be added, but the amount of winter killing will be materially lessened and much will be done to aid in securing a stand of clover.

Late seeding of wheat should be continued in Hessian Fly territory. Fly free dates are announced each year by the State Agricultural Experiment Station. Farmers should follow these as closely as possible and prevent a heavy loss.

While the yields have not been extremely high one year with another, winter wheat furnishes a cash return which has been of great assistance to farmers. In very few cases do farmers experience a complete failure.

The winter wheat crop in Indiana distributes the farm labor load. It is possible to prepare the ground and seed this crop in the fall when there is spare time, and when the horses and machinery can be used to advantage. If this land should be left until spring, when the rush of labor comes in connection with the corn crop, the cost of handling the farm is materially increased.

W. C. Etheridge

Professor of Field Crops
Missouri Experiment Station

THE average yield of wheat in Missouri is about 15 bushels per acre, but some good farmers make 30 bushels on land no better than the average, at small additional cost. They do it by combining the good methods of wheat farming. These methods are as simple to state as the first five letters of the alphabet:—

(*a*) good preparation of the land
(*b*) use of the right variety

(*turn to page 49*)

The wheat in this field, grown with fertilizer, ran twice as high in yield and far ahead in quality as compared with the wheat at the left without fertilizer. And that meant a more valuable crop with a lower cost of production.

Jeffisms

Power lies in having done the thing before.

Relatives are people who come to visit you when it gets too hot to cook at home.

Are you famous? Try to cash your fame at a bank!

If you know you are right, you can afford to wait.

A magician is a farmer who made money last year.

The only men you hate are those you do not know.

Through belief, grief finds relief.

You can spend but one moment at a time, never two — Eternity never has twins.

Jeff

MORE SPRAYING

By H. A. *Cardinell*

Extension Specialist
Michigan Agricultural College

THE circulation of BETTER CROPS undoubtedly brings information to more persons interested, either directly or indirectly, in the fruit industry than any magazine devoted entirely to the fruit business. Such a publication is therefore the logical place for an article of broad and fundamental aspects of the fruit game.

The May issue contained a real article by F. J. Schneiderhan of vital interest to fruit growers of every region.

The writer has completed records on unpublished data gathered from a spraying demonstration that fits right on to the above mentioned article.

This test was made in a part of a 300 acre orchard in Benzie County, Michigan, owned by Joseph Smeltzer & Sons.

It was conducted throughout the season of 1923 to determine, (1) effectiveness of control under three different pressures; 190 lbs., 250 lbs. and 350 lbs. using the same number of gallons per tree throughout the season and for all pressures.

FRUIT growers in the U. S A.. are familiar with the experiments conducted by Leroy Childs of the Hood River, Oregon Branch Station which shows consistently that under all pressures used, the percentage of control of disease and insects fell off in the top parts of the tree. The Michigan trials showed the same condition.

In addition we found a marked difference in control in all parts of

(*turn to page 39*)

An Orange Grove *that* Came Back

By S. G. Rossiter

Redlands, California

When everyone else gave up hope, this man stuck and found the way to success.

IN the early planting of orange groves in Southern California, there was very little attention paid to the type of soil best adapted to orange culture.

All the soils were virgin and had plenty of plant food available to take care of the tree's needs for the first seven or eight years. But, as abundant crops were harvested, some of each necessary element was used up or leached out by excessive irrigation so that with some soils certain of these elements were entirely lost. Hence for the tree to keep its health and production it has been found necessary to apply fertilizer.

Many groves have decreased from a yearly production of five to six boxes per tree to one to two boxes.

In our large manufacturing plants the unit cost of production is decreased by giving particular attention to the quality of each article and increasing the quantity. This, too, seems to be the correct solution as to orange culture or any other agricultural production.

HIGH quality fruit or vegetables are the only portion of production that are bringing the farmer of today returns that justify the effort. Growing a larger percentage of first quality fruit and larger crops, he will reduce the cost of production per box or pound and realize a larger return per acre.

It has been observed by the Experiment Stations that to supply plots with nitrogen alone in the quantity of three pounds of actual nitrogen per tree reduced the cost of production lower than the use of all the three necessary elements, producing larger yield—not considering quality. These plots have all been run on practically young orchards planted in virgin soil, which accounts for the above findings. But when this plan is used on matured groves, such results are not obtained. The tree becomes sickly because of unbalanced feed. Hence production and quality decrease very heavily and discoloring of the foliage, called mottle leaf, is one result.

Also, owing to the soils throughout our districts not being of the same type, one fertilizer program cannot be used for all conditions. There are students of plant nutrition who have developed to their satisfaction the fact that they must apply all of the three food elements according to the particular conditions of growth and soil. The findings also indicate that there is a proper time for feeding the trees.

By analyzing the soil, we are not able to determine the actual availability of what is locked up. Therefore, from actual experience, it has been found that to apply different fertilizer materials in different combinations and proportions on experimental plots, is the only logical way to determine just what element is needed.

THERE are many growers today wondering what to do next—their quality and quantity are below the average. Their returns have diminished considerably, but their costs mount higher every year, resulting in many of the groves being fertilized on a basis of "what is the cheapest" instead of "necessary" to maintain quality and production.

From this there is only one deduction, and that is that there must be more serious thought given to fertilization by each grower to fit his individual needs.

To apply more of one of the necessary elements than is needed, is a waste and to apply not enough is a loss.

The author of this article beside the 12 year old Valencia trees that came back under the treatment he describes.

The following narrative of my experience on a 20-acre orange grove, is self explanatory as to the necessity of serious study of materials, their individual actions in relation to time of application of results desired, availability of each as to when needed, quantity as to whether a waste or loss.

In October, 1919, the grove was at its peak of production and value, a very fine crop had been harvested and nice returns realized, which made the owner jubilant. Hence he wished to do more for the grove the next year and keep its condition the same. He ordered 1¼ tons per acre of bone tankage analyzing 6 per cent nitrogen, 15 per cent phosphoric acid finely ground and first class mechanical condition. In view of the fact that the soil was of the sandy loam type, the caretaker begged him not to apply this material at that particular time, but to wait until January. His reason was that, if the month of December turned off warm, this material would start action and produce a very heavy growth. If a cold spell should come the first part of January, the trees would be damaged to such an extent it would take at least three years to bring them back. This very thing happened. The grove went without fertilizer for nine months becoming one of the worst looking pieces of property in that district. Eighty to ninety Sweet trees were ordered taken out entirely. The owner debated and inquired of many as to what plant food to adopt to bring the grove back. Finding so many different views and opinions—no two alike—he decided to let the caretaker work out the difficulty the best way he saw fit.

Nothing but a practical common sense rule was used in accomplishing the following results. There are three regular growths of the citrus tree which appear every year without fail—March, May, July. These growths come regularly each year. By applying fertilizer materials that

(*turn to page 57*)

Better Crops' ART GALLERY of the month

At the head of one of the most progressive agricultural stations in the country. Dr. H. L. Russell, Dean of the College of Agriculture and Director of the Experiment Station and Extension Service at the University of Wisconsin. A distinguished authority, an able executive, and a well-loved leader.

© Harris & Ewing

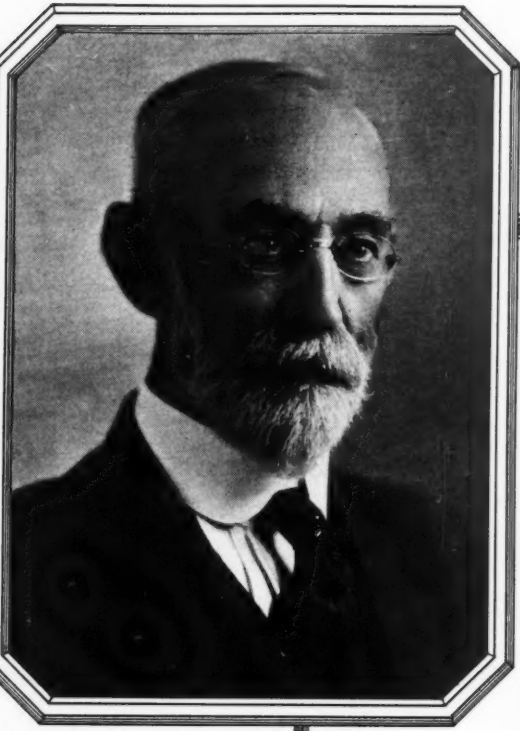
This attractive young lady is showing how the farmers of Habersham County, Georgia, are packing their apples well and so making more money.

A South Carolina County Agent demonstrating Ming Beans, a variety developed satisfactorily as a soil food in the South.

Purdue's Champion, a seven year old White Leghorn Hen, who in the past seven years has laid 1,243 eggs, the long distance record. She belongs to the flock at Purdue University, Lafayette, Ind.

Dr. C. W. Larson appointed chief of the recently established Bureau of Dairying, U.S.D.A. A native of Iowa, he is also a graduate of the Iowa State College of Agriculture and has been interested in dairying for the past 20 years.

County Agent, L. M. Busche, sends us this photo of the 10 acre sugar beet field of Wm. Mitchell of Monroe, Ind. Four hundred acres were fertilized with 200 lbs. of 2-12-6 with excellent results. The rest was unfertilized and the stand so poor they were torn up.



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For years Dr. Thomas C. Atkeson has represented The National Grange at Washington, D. C. His services to the progress of American agriculture have won him nation-wide respect and affection.

Why the GRANGE is *Different*

By Dr. T. C. Atkeson

Washington Representative of the National Grange

¶Somehow it's more difficult to make farmers' organizations succeed than any other type. Yet the Grange has been growing steadily since its foundation in 1867. In this article Dr. Atkeson explains some of the principles on which its success is based. He has modestly omitted one important reason why the Grange is different: its ability to enlist men such as himself in its work.

I HAVE been asked to tell the readers of BETTER CROPS the characteristics of the National Grange which distinguish it from other farm organizations. It is a subject for a much more extended article than the limits of this publication, which features brevity and condensation, will permit. I hope I may, however, be able to say some things on the subject, which will lead those who may thereby have their interests awakened to pursue the subject further. I can now, after more than forty years of membership and experience in the Grange, and a careful study of all its history, see no reason why every farming community in the United States should not have a flourishing thriving Grange whose members and supporters would be the ones most profited thereby, and whose influence should be a radiant source of inspiration, for community and agricultural improvement benefiting every person within the radius of its influence.

This is the ideal toward which the National Grange is striving. There is neither pride of leadership, jealousy of prestige, selfishness of purpose, nor commercialism in any form at any point in its program. That is the first point in which it differs.

THE Grange is a fraternity and not a business organization. Builded and building for better men and women on the farm—and better children, and better conditions for all that surrounds childhood—the Grange believes that this will solve an important part of the economic problem of agriculture.

The Grange is an organization into which to put time, money and effort for the intangible benefits which come in double measure out

of the Grange and its influence. There is the benefit which comes from the very experience of co-operating with one's neighbors and participating with them in effort, the benefit of which is not purely selfish and personal. And then, when a Grange—representing the very best there is in a community—actually does do things, there are the very definite results, in profit if the effort is in business; in better school, or church, or roads, if it is that kind of an effort; or in social improvement, if that is the work which is undertaken.

I am stressing these aspects of The Grange first, because in this era of stress upon the purely material, instead of the individual or the community, upon profits in dollars instead of investment in character, training, leadership or knowledge, this is the most distinguishing characteristic of this old, tried, tested, successful, steadily growing and steadily progressing organization of farmers.

You reader out in the heart of the Corn Belt, where unfortunately for all of us there are not many Granges now in existence, will probably find it somewhat difficult to see just why your farmers' meeting should open with a deliberate and somewhat formal ceremony, with the flag of the Republic in place of honor behind the presiding officer, the open Bible on the altar, and a prayer of praise, and hope and appreciation for the great gifts of nature and abundance of God's bounty to the tillers of the soil, and a hymn of thanksgiving or a song of farm life, before the business of the meeting is begun. The Grange does this, and no meeting may be legally opened for business without thus turning aside from the commonplace of business and buying and bartering, to bring its members into common accord, and common regard for other, and perhaps into higher and more enobling thoughts for a brief season.

This is certainly another reason the Grange is different. That it is worth while is attested by the fact that eight thousand and more subordinates and county granges, averaging more than a hundred farmers in each Grange, loyally carry on the work of the order this way. In these Granges where the fraternalism, and the esoteric work, thus briefly outlined, is best carried out, and where at every meeting this touch of ritualism, this raising of the mind and conscience of the members for a few moments out of sordid dealing with the material things into the realm of brotherhood and higher thinking to a real sense of the dignity of labor, the dependence of all others on agriculture, and the high character of our calling—it is in those communities the Grange flourishes most, and is most helpful in every way.

THE most successful working Granges are perfect examples of one of the most quoted rules by which individuals achieve success, to "do with the might what the hands find to do, to seize the first task nearest at hand and do it better than it was ever done before." The history of the hundred most successful Granges in the United States will be found to be records in which community achievement will rank largest, cleaning up the community, providing a place for socials and entertainments, providing for the boys and girls, aiding the schools and churches, looking after the community ne'er-do-well, providing scholarships for deserving young people, and item after item of this character. Is it strange that there is no word of farming, of agriculture, of marketing, of cooperation in this list of achievements? If you propound this question to the members of the Grange, they will look at you with surprise, and tell you, "Why we do farming and marketing all

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The Wise Guy Family

By Dr. Frank Crane

I HAVE met members of the Wise Guy family all of my life. One of the boys used to sit next to me at school. He knew how to win at tit-tat-toe. He knew how the ball team ought to be run, and how the teacher ought to conduct the class. He knew the best kind of marbles and how much they were worth, also just how to pack a basket for a picnic. He was apt at telling the rest of us just where we were wrong, yet he was never wrong himself.

¶Since those days I have seen members of the family in every corner of the world. At least one member of the Wise Guy tribe belongs to every club, every lodge and every Church. The Wise Guy is acquainted with all those people that the rest of us regard with awe from afar off. He knows that waiter in the restaurant to whom the rest of us would not dare speak, smiles at him and calls him Charlie. He knows how to row a boat and run a farm, how the barber ought to cut your hair, how the general ought to conduct the army, and how the woodman ought to chop a tree.

¶At our boarding house he usually ends all discussion, for there is nothing that ever comes up for debate concerning which he does not know the ultimate facts. If you say there are three billion and ninety-six fishes in the ocean, he will give that superior smile and dry little laugh that show that he is very sorry for you, and generously inform you that any school boy knows that the correct number is four billion and twenty-seven. He knows why Germany went to war, and if people would only ask him he could easily tell them her ability to pay reparations. You may think you know why France occupied the Ruhr. You don't. He knows, he and Poincare and a few others. He knows the sinister motive behind every move that Great Britain makes, also the sly designs of the Japanese.

¶You may think that Prohibition was voted by the people of the United States. Ha, ha. He can tell you the name of the man that supplied the money that did the whole business. He knows how to keep your hair from falling out and how to reduce your flesh. He knows why Hylan was elected, and what Hearst has up his sleeve. You may think you know why Lloyd George was finally defeated, but you do not. Mr. Wise Guy knows.

¶He knows which way the market is going to turn and just what kind of collar and necktie you ought to wear. He knows the secret motives behind the labor unions, and can tell you exactly what the Standard Oil and the United States Steel Corporation are up to. He understands every subject in the world, with the possible exception of modesty.

¶And the charming thing about him is that he not only knows everything, but he is perfectly willing to tell you.

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How Potash Pays *in* Alabama

By F. E. Boyd
Alabama Extension Service

(This is one of the essays submitted in the contest recently conducted by the Potash Importing Corporation of America. It was warmly praised by the judges and we are glad to print it in Better Crops *for it tells a clear and convincing story.*

To establish the fact that "Potash Pays," it is absolutely necessary that a large number of well planned experiments, and demonstrations be conducted throughout a long period of time, on various types of soil and with several different crops.

In determining the true worth of potash as plant food it should be used alone, with nitrogen, with phosphorus and in a complete fertilizer. It should be used at different rates per acre and with varying amounts of nitrogen and phosphorus. In the cotton belt its value before and since the appearance of the boll weevil should be determined. During the period from 1911 to 1923, all the above mentioned phases of the potash question have been carefully studied by the Alabama Experiment Station. Certain facts have been definitely established by the Experiment Station and these facts form the basis for hundreds of crop and fertilizer demonstrations conducted by county agents.

Cotton

The State of Albama is divided geologically into seven soil regions and on each of these soils potash has been used, alone and in various combinations, including a complete fertilizer, for cotton.

A study of the following table shows very clearly that on all soils except the Piedmont division, the return per dollar invested in potash is greater than the return from either acid phosphate or from nitrate of soda.

On most of these soils, with a minimum of 240 pounds acid phosphate and 100 pounds nitrate of soda, additional potash did not increase the yield. Based on a large number of experiments and demonstrations conducted in 1923 the preliminary reports indicate that extra potash may pay when the acid phosphate and nitrate of soda are increased.

Studying these data from another angle reveals an interesting fact. The Alabama Experiment Station recommends for cotton a minimum application per acre of 200 pounds acid phosphate, 100 pounds of nitrate of soda and 25 or 50 pounds of muriate of potash. At this rate per acre it costs $92.00 or $102.00, depending upon the amount of potash used, to fertilize 20 acres of land. On every soil division except

The following table gives the return per dollar invested in acid phosphate, nitrate of soda and muriate of potash when each is used in a complete fertilizer.

Soil Division	Acid phosphate* 240 lbs. per acre $	Nitrate of Soda* 100 lbs. per acre $	Muriate of Potash* 25 lbs. per acre $	Muriate of Potash* Additional 25 lbs. per acre $
Lower Coastal Plain Before boll weevil	3.72	4.64	14.80	6.00
Lower Coastal Plain After boll weevil	3.20	4.82	12.60	2.20
Lower Coastal Plain S. E. Alabama	5.71	6.00	14.60	16.00
Lower Coastal Plain S. W. Alabama	3.58	4.07	13.00	....
Black Belt	4.87	2.93	11.20	5.20
Upper Coastal Plain Yellow subsoils	4.23	5.00	15.00	....
Upper Coastal Plain Red subsoils	4.67	7.18	11.60	....
Piedmont	5.57	5.86	4.20	....
Limestone Valleys Red subsoils	7.00	8.54	13.00	....
Limestone Valleys Yellow lands	7.82	4.54	24.40	7.60
Appalachian Plateau	7.31	5.25	8.20	....
Highland Rim	10.19	3.68	11.80	....

*Acid phosphate ..... $13.00 per ton.
Nitrate of soda ..... 56.00 per ton.
Muriate of potash ..... 40.00 per ton.
Seed cotton ..... .10 per lb.

two (Piedmont and Appalachian Plateau) the value of the increased yield of seed cotton per acre, due to the use of potash as recommended, amounts to more than the total cost of the minimum amount of fertilizer recommended for the 20 acres of land. That "potash pays" when applied to cotton on Alabama soils is evident even after a casual study of these data.

Sweet Potatoes

FERTILIZER tests with sweet potatoes show the following results: On Appalachian Plateau soils, an application of 50 pounds of muriate of potash in a complete fertilizer (480 pounds acid phosphate and 200 pounds nitrate of soda) increased the yield 52 bushels per

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On the farm of W. M. Johnson of Montgomery County, Alabama, a complete fertilizer gave a yield of 2,340 lbs. of seed cotton per acre. This is 356 lbs. per acre more than where an incomplete fertilizer containing no potash was used.

A Giant Waits to Serve You

By Lewis Edwin Theiss

¶Electricity is still in its infancy. Its possibilities have barely been scratched. Mr. Theiss, a Pennsylvania farmer, is interested in the Giant Power survey, now being undertaken in that state. He is particularly fitted to discuss the subject both from the farmer's and engineer's point of view.

IN the physical world mechanical power holds the same place that truth does in the spiritual—it sets men free. If you do not believe it, glance backward a few centuries and see how little of freedom men had. Labor was then terrible and never-ending. Necessarily it was all hand work. It occupied every moment of daylight, and left the toiler so wearied that all he could do was to fall asleep. He was not free to read or study or improve himself. His situation was little better than that of the horse or the ox. The price of existence was toil so severe that at the same time it maintained life, it shortened it.

Came the invention of the steam engine, the development of machinery, the creation of electric power. Man's condition altered incredibly. The working day was cut to twelve, to ten, and finally eight hours. Work was made light. From producing a bare existence in sixteen hours, man came, by the use of power, in eight hours to produce a surplus. He was free from fear of starvation and poverty, free to travel and educate and enjoy himself. By the use of power he freed himself in two or three hundred years from much of the weight that formerly, like an old man of the sea, clung round his neck.

That is, he did in part—the part that lives in towns. The part that lives in the country did not keep pace in utilizing power and machinery. So the farmer fell behind. He continued to work largely with his hands. His returns were for hand work. His brother in the city used mechanical power, more and more of it, and with every additional use of power his wages went up. A man using mechanical power can produce more wealth in a day than a man using only his muscles. Hence he can draw more pay, for wages are necessarily based on production. And so, as cities grew, and more machinery and power were used, the city worker earned relatively more and more money. Power had set him free.

IF the farmer also had the machines and the power to drive

them, he, too, could earn more. Alone he could do as much as formerly he did with hired help. With mechanical power to curry the horses, milk the cows, separate the cream, pump the water, hoist the hay, grind the feed, saw the wood, shell the corn, and do a hundred other tasks now done so slowly and laboriously by hand, the farmer could be much like the worker in a city mill. He could watch over machines that did the actual labor, and operate several machines at once.

The reason it is not like that on farms generally today is because the farmer cannot command the use of mechanical power. If he can, too frequently it is on terms he cannot meet. Practically, the only power available to the average farmer is the gasoline or coal oil engine. Like all isolated plants, these are costly. When the farmer can get electricity, he often pays fifteen cents per kilowatt hour as against three to five cents paid by the big city manufacturer.

To be on a par with the city worker, the farmer must have ample cheap power. If industry is to prosper, it, too, must have ample cheap power. All future development of our country, both industrial and agricultural, hinges upon power. Power will be the limiting factor. Not another spindle can turn, not another factory start, not another farm be electrified, without the creation of additional power. Each year sees an increase of something like ten per cent in the demand for power. When electricity is made available for farms generally, the demand will increase enormously. Power, power, and still more power will be needed through the years. And if we build up a gigantic civilization founded on power, and then run short of power, the disaster would be appalling beyond description.

Consequently, with power as our very life blood, we must give heed to the question of the proper development of our power resources. We think of them as unlimited. The fact is that, like our timber,

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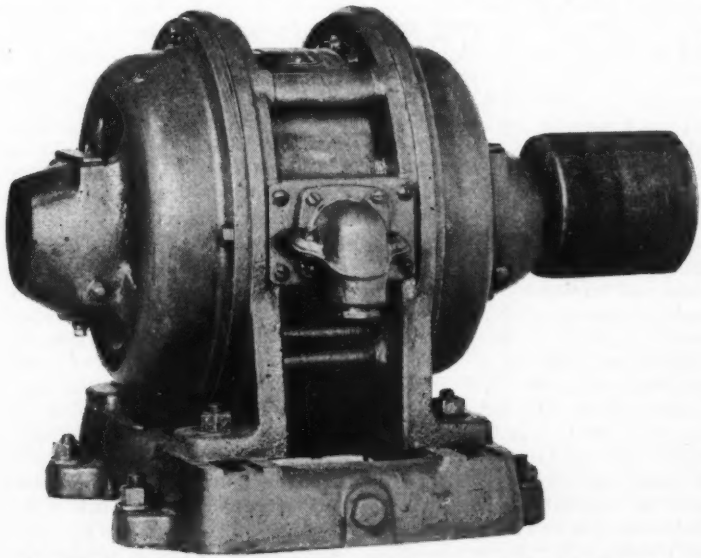

At present electricity works chiefly for city dwellers. Mr. Theiss in his article explains how it may soon be enlisted for the farmer's benefit.

¶Why were these farmers successful? Was it good luck or good judgment or both? Whatever your decision, you will find their stories of unusual interest.

They Made PROFITS *by* PIONEERING

By *Arthur P. Chew*

U. S. Department of Agriculture

SHERM S. RUMLEY, of Decatur County, Iowa, who has been a large grain farmer for many years and whose practice formerly was to sell all the corn he produced, was caught with a big crop of corn on his hands when corn went down to 25 cents a bushel in the winter of 1921-22. Did he dump his corn on the market for any price it would bring, or burn it for fuel because for the moment he could get more heat that way than by selling the grain and buying coal with the proceeds?

He did not. He held the corn and bought more. He fed his whole supply to livestock and made money while some of his neighbors were declaring the only way to get corn back on a profitable basis was to destroy or give away a large part of the surplus. Mr. Rumley is still a large grain grower. But he doesn't sell grain any more. He feeds it to his hogs and cattle, and in that way he has got his farm in very prosperous shape.

THERE is no single formula which explains the success of all the farmers who are coming through the readjustment period in good shape. But these men all have one thing in common. They have faith in the power of agriculture to come back.

That is one among many similar cases reported to the United States Department of Agriculture by county agents. Thousands of farmers have solved the problems forced on them by the collapse of formerly profitable markets by shifting from grain growing into dairying, poultry, swine, corn, alfalfa, and leguminous crops in general. They have not all gone about their task in just the same way. Some farmers have gone out of wheat entirely and turned to corn and livestock. Others have not cut down their wheat production at all, but they have built up supplementary sources of income such as dairy herds and poultry flocks. Many have found success in greater diversification of crops. A few have found it in more efficient specialization.

Mr. Rumley gave a striking example of this faith when, in a crisis in the corn market, he turned from a seller to a buyer of corn. It took courage to do that in face of the prevailing pessimism about the corn outlook. But everyone knows now that Mr. Rumley's judgment was sound. Cheap corn fed to hogs in 1921 and in the early part of 1922 returned pretty close to $1 a bushel when finally marketed in the form of pork. Later, when hog production expanded under the stimulus of cheap corn, the corn surplus vanished and the price of corn rose almost to a level with the price of wheat.

Thus was illustrated the old economic principle that over production for any long period is impossible, because over production means unprofitable prices and unprofitable prices put a check on production. Had more farmers been as confident as Mr. Rumley that the rule would work out in the case of corn, it would have been less easy for him to make money by going against the crowd. But, on the other hand, a more general optimism would have prevented corn from dropping as low as it did.

AFTER all, the secret of practically all successes in agricultural readjustment in the last two years is confidence in the value of getting production in right relation to demand. Consider the record, for example, of G. H. Humphrey, who lives in Corson County, South Dakota. Mr. Humphrey specialized in wheat up to 1922. He raised some oats and had from 50 to 60 head of beef cattle. He milked from two to five scrub cows. Farming in that way, to put it mildly, did not make him much money. With wheat below pre-war purchasing power parity, and with beef cattle heading downward toward less than pre-war prices, persistence in wheat growing and beef cattle raising looked like taking a header into bankruptcy. Accordingly, Mr. Humphrey got out of wheat growing and beef cattle, at least to a considerable extent.

After taking counsel with the county agent he built a fine dairy barn, reduced his beef cattle herd and increased his milking cows up to 10. He planted 15 acres to corn. built a cement silo 27 feet high, and mapped out a well-balanced livestock raising program. That was in 1922 and it was just a starter. Last year Mr. Humphrey planted 20 acres in corn of a pure strain of frost-proof Golden Glow dent. This year he plans to have 40 acres in this kind of corn. He has bought six high-grade Jersey cows from Wisconsin, and is making dairying his main pursuit, with hogs a side line. And he is no longer operating in the red.

HERE is another case. Robert Empey, in Prairie County, Montana, grew little but wheat until 1917 and did not prosper. Then he turned to mixed farming. And note that he turned to mixed farming when wheat was fetching fancy prices and Montana farmers generally were concentrating on wheat in the hope of redeeming losses due to drought. Mr. Empey began cautiously to feel his way in dairying and poultry raising. Two years ago he started beans and corn. He had 50 acres of corn in 1922—and that in a locality formerly supposed not to be suited to corn growing. He milked eight cows, and raised 31 hogs, seven steers and 60 turkeys for market. He is now out of debt and is expanding his operations. And wheat prices are the least of his troubles.

Many other Montana farmers have done well in mixed farming. In fact, one of the good by-products of the agricultural depression will probably be a demonstration that some regions formerly considered

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WAREHOUSE FINANCING of

By Richard H. Tingley

DURING the World War the business of warehousing suddenly woke up to find itself an industry of far greater importance than it had before realized. It also became aware that it was a sadly unorganized, disjointed, happy-go-lucky, hit - or - miss industry, conducted without cooperation, without standardization of method or practice—every man for himself and the devil take the hindermost.

I am speaking now of public warehouses, only. Private warehouses will be omitted from this sketch.

A public warehouse offers its customers two classes of service; a safe place where goods may be stored while awaiting a market, and a receipt for the stored goods which, under the proper conditions, may be used as collateral at bank for borrowing money. I shall deal chiefly with this latter, or financial feature, of public warehousing.

There are thousands of public warehouses in this country of all sorts and conditions—good, bad and indifferent. I do not know how many. I once tried to find out but failed. Every banker knows that there is no better security for a loan than a warehouse receipt based on the essential commodities of commerce stored in a warehouse of known responsibility. Becoming convinced, however, that warehousemen and depositors of merchandise generally did not fully realize this fact, I was asked, a few years ago, to compile some statistics on the matter. Nobody knew to just what proportional extent such receipts were being used at the banks, taken as a whole, and the results I found were most surprising and made both warehousemen and bankers take notice.

THEY showed that, in 1921, all of the banks of the United States (except the Federal Reserve banks) loaned 27 billion dollars on collateral security of all kinds, of which, but a little more than 600 million dollars was secured by warehouse receipts for commodities stored; in other words, only about 2.26 per cent of the loans were based on warehouse receipts — universally acknowledged the very best of collateral. In 1920 this ratio was less, only 2.02 per cent, and in 1919 still less, 1.77 per cent.

The statistical research involved in arriving at these results brought out, also, another startling figure, namely, that, of the 600 odd million dollars loaned by the banks in 1921 on warehouse receipts as collateral 41 per cent was loaned on receipts based on cotton, 15 per cent on grain, and 44 per cent on all other

¶The United States Warehouse Act which became a law in 1916 aimed to establish a form of warehouse receipt that would be easily and widely negotiable and, therefore, of definite assistance in financing crops. ¶Mr. Tingley here discusses the use that has been made of this machinery and the possibilities that lie ahead.

Agricultural Products

commodities. These figures I shall tabulate:—

On Cotton.....	$251,387,000	41%
On Grain.....	91,970,000	15%
On Other Commodities (General Warehousing)	269,781,000	44%
Total.....	$613,138,000	100%

Armed with these figures, both bankers and public warehousemen are going out for business. They see that they have not been getting "theirs" in the past, and they propose to get it, and they have some very good selling arguments at their command to help them.

THERE are two classes of public warehouses; general warehouses applicable to the storage of all kinds of commodities, and special warehouses used for storing agricultural products. The former represents the large warehousing business as conducted in the big cities of the north and west; the latter do business in the cotton sections of the south and the agricultural districts of the west. The former are well organized in the American Warehousemen's Association and have gradually worked up to standard methods of practice. They have also adopted a standard form of receipt for goods stored which is generally recognized by banks throughout the country—yet, in 1921, these big and prosperous warehouses developed but 44 per cent of the credit business of the country in warehouse receipts, and commanded only about one per cent of the nation's bank credit moneys.

The second class, the agricultural warehouses which have accounted for the other 56 per cent, are not so well organized. They are, however, rapidly becoming so under the guidance and assistance of Uncle Sam and his Department of Agriculture, Bureau of Markets.

UP to but a few years ago the financing of cotton by the grower or southern merchant was entirely a local affair. An owner of cotton in store at a warehouse might obtain a loan upon his receipt at the local bank readily enough provided his rating and that of the warehouse were good, and provided, further, that the local bank had the money to loan. In the rush for funds during the cotton marketing season it often happened that the bank had all of its available funds loaned out long before the demand for money had been satisfied. The only course then open to the cotton owner if he was in need of funds,

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(Another plant on Prof. Hansen's blacklist. This is a common weed and it is well to know its characteristics.

Jimson Poisoning

By *Albert A. Hansen*
Purdue University Agricultural Experiment Station

WHO would ever suspect Jimson weed, one of the commonest members of the hoglot flora, of being a fatally poisonous plant? But it is poisonous, nevertheless, to both animals and man.

The greatest wonder of Jimson poisoning is that anything or anybody would actually eat so vile smelling and ill tasting a plant, but under certain conditions Jimson weed is grazed by farm animals. And we have collected considerable field evidence in Indiana to prove that when Jimson is eaten it is a dangerous stock-poisoning plant. Take the case of Judge C. H. Wills, of Kokomo, for instance, who owns a farm in Howard County, Indiana. Last fall he lost six cattle and the veterinarian diagnosed the cases as plant poisoning, although he was unable to locate the death-dealing weed. A careful examination of the farm disclosed a solid half-acre of Jimson, and there was hardly a plant in the entire patch that did not show evidence of having been freely grazed upon.

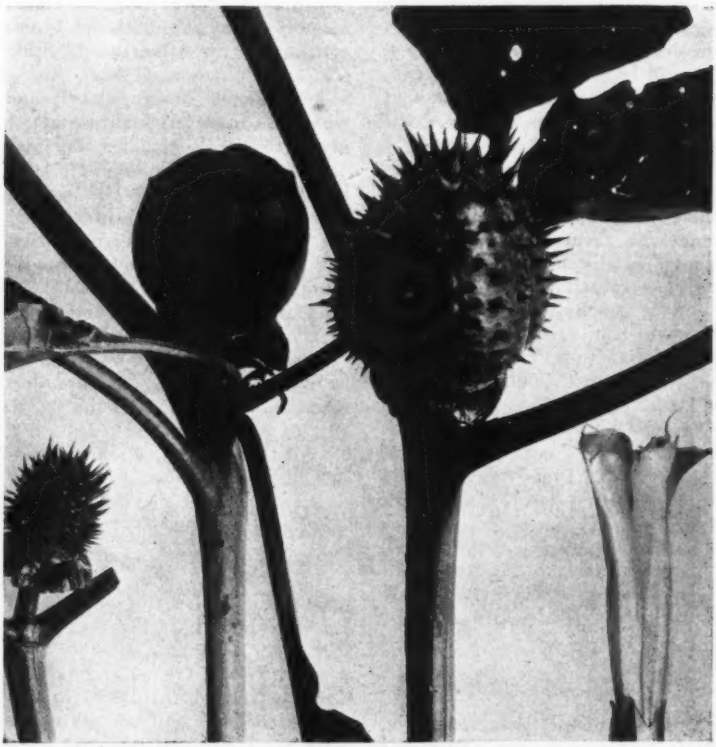
THEN there is John Rose of Alfordsville, Daviess County, Indiana, who was sorely worried because a number of his hogs became ill and three of them died. The affected animals wandered around the hoglot in an aimless fashion, the pupils became dilated and the vision was apparently seriously affected. One of the dead animals was posted by Dr. G. E. Norman, a veterinarian of Jasper, Indiana, and the stomach was found to be crammed with Jimson weed and a small sprinkling of corn. Incidentally, after the Jimson was destroyed, Mr. Rose experienced no further trouble of this character.

The field evidence against Jimson is supported by the laboratory investigations of chemists. An analysis of the plant reveals the presence of several dangerous alkaloids, principally *hyoscyamin*, the poisonous constituent of the deadly henbane, and *atropin*, used in medicine and commercially obtained from belladonna root. Experimentally, comparatively small doses of *atropin* have proved fatal to dogs and other animals. We also learn from the chemist that the poison is contained in all parts of Jimson weed, but that it exists in greatest quantities in the seeds and flowers. In fact, the United States Department of Agriculture, has reported a number of fatal cases of human poisoning, principally in children, as a result of eating Jimson seeds or fruits or from sucking the flowers. Two cases of this character occurred at Pleasant Lake, Indiana, where two children were seriously ill with Jimson poisoning, although neither case was fatal. Both the United States Department of Agriculture

and the Colorado Agricultural Experiment Station report poisoning in cattle due to grazing on Jimson sprouts.

WHAT are the peculiar conditions responsible for animals eating the disagreeable herbage of Jimson weed? In the cases on the farm of John Effinger, of Evansville, Indiana, who lost five hogs from Jimson poisoning, the weed was evidently eaten because no other green feed was available. The animals died during a period of drought when the only green growth in the hoglot and pasture was a heavy stand of Jimson weed. Since all grazing animals crave green vegetation this seems to be a feasible explanation. We suspect that a faulty diet or lack of salt are other factors that may be responsible for animals eating the vile Jimson, although this has not been demonstrated experimentally. Under ordinary conditions, Jimson weed is left severely alone by all grazing animals, which is fortunate since it is one of our commonest weeds in farmyards and hoglots.

By the way, it may be of interest to know that Jimson contains *scopolamin*, the drug made prominent in connection with "twilight sleep" and lately used, according to newspaper reports, to place criminals in a strange sort of trance during which the subject is supposed to answer all questions truthfully. This certainly suggests a wide field of usefulness for the lowly and despised Jimson weed.



The fruit, flowers and foliage of common Jimson weed are all poisonous.

¶Dramatize an idea and you can put it over. That's what Brother Roberts did out in Nebraska and here he tells you how.

Exit Scrub Bull

By *Walter F. Roberts*

County Agent, Saunders County, Nebraska

WHY should the scrub bull live? Why should any criminal live? Perhaps it is because his crime has never been discovered. Criminals walk the streets of our great cities and travel our public highways unnoticed. Then some day there comes a time of reckoning. The crime is discovered. A jury is called; a Judge sits upon the bench, and lawyers proclaim in eloquent terms the guilt or innocence of the offender.

Likewise the scrub bull parades over green pastures and fertile lands, king of his domain, until some wise farmer or meddlesome county agent calls him to account. A jury is called; a Judge again sits upon the bench; lawyers orate, and witnesses testify, while the king of yesterday stands by, waiting to hear the death knell which will make him the mince meat of tomorrow.

The following complaint is presented by the Judge, setting forth in no uncertain terms the present status of the prisoner;

In the farmers' court of "Progress" County,—"Forward" State.

The farmers of "Progress" County
Plaintiff.

vs

A Scrub Bull
Defendant.

Complaint for degrading live stock, and causing loss of finances and pride.

The complaint and information of the farmers of "Progress" County, "Forward," State, made before the undersigned Judge of the Farmers' Court, within and for said County and State, alleges and shows that the said A Scrub Bull, since the memory of man runneth not to the contrary, in the County and State aforesaid, then and there knowingly, willfully, unscrupulously and with malice aforethought, contaminates the herds of dairy and beef cattle, progenating off-spring of the brindle, ringstreaked, and muckle dunn type, befouling and vilifying the size, shape, quality, quantity, and value of the entire bovine family, thereby causing calamity to the farmer, dairyman, and stock breeder, their homes, widows and orphans now and forevermore, bringing on financial loss and failure of pride, undermining the entire system of dairy and meat production, by the heirs and progeny of him, the said A Scrub Bull.

That the accused has also devoured the green pastures, and crops of golden grain, without remuneration to the owners thereof. He has come like a thief in the night and stolen their birthright; he has become a menace to their progress; their herds have become narrow, even to the width of two thumbs across the hips and one across the withers; the hoofs and the horns are all that have not diminished,

contrary to the peace and dignity of the farmers of "Progress" County "Forward" State, who ask that upon conviction the accused suffer death and extinction.

By A. Farmer.

Subscribed to in my presence and sworn to before me—

Upta Date.
Judge.

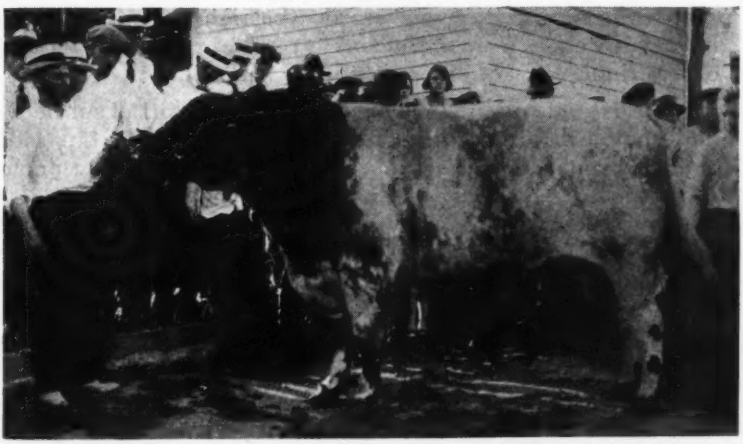
THE Scrub Bull's defendant now rises to speak. He proclaims the only known reasons for the prisoner's existence in the following words:

Gentlemen: We are proud of our civilization; we brag of our schools and flaunt our wisdom before the world. We hold in still higher esteem our peculiar form of government whereunder one person has the same rights as any other, be his position humble or high.

Years ago in the dark ages, the word of a King was the only law. It was well for those who gained his favor; they banqueted, were clothed and entertained at the people's expense. But what of the workers, the faithful throng who tilled the soil, and ran the factories, such as they were? Let one of them make a mistake and he was hanged. Let him worship in a different way than the King and he was thrown into a dungeon. Let him question for an instant the King's authority and he was beheaded. In this high handed manner not only men, but also animals were persecuted. If the King wanted all the bulls killed except those who polished their hoofs, and wore pink ribbons in their tails, his wish was carried out.

With the discovery of America a radical change took place. A long war with England freed the Colonists from the rule of a King. The Battle of Bull Run has freed the bulls. A government has been set up giving the poor and the weak the same priveleges as the rich and the strong. It is a body blow to aristocracy, and includes the bovine family. Listen to this confession from A Bad Farmer, a death bed declaration; "I, A Bad Farmer, being on my deathbed, realizing that my heart may beat once and then beat no more, wish to make up for a wrong I have done one who was a friend in need.

(*turn to page 46*)



A pure-bred shorthorn who will take the place of A Scrub Bull if the latter is convicted and sentenced to death.

The Editor's

THE RIGHT TO DISAGREE

Now and then I hear people complaining that farmers are too individualistic, too set in their own ways to be willing to work with others. This is often given as a reason for the failure of farmer organizations and farm improvement projects.

I am willing to admit that there is much truth in this assertion, but there is also another side to the story. It looks to me as though liberty, in any real sense of the word, is going out of date. I am just old fashioned enough to believe that liberty is a good thing and something we are all entitled to.

What is liberty, anyhow? Probably no two people would define it the same way. I would say it meant complete freedom of thought and as much freedom of action as could be permitted without trespassing on the rights of others.

To accept and follow this conception of liberty, you must be something of an optimist. You must believe that there is a meaning behind life, a goal towards which mankind is working. However strongly you may believe that you, and those who agree with you, are on the right track you must have faith enough in the ultimate result to be willing to let others think and act differently from yourself.

This is going off into a field where there are lots of subtleties and complexities. I'm not much of a philosopher but I do think it would be well if we all pondered a little more about such things. The decay of the idea, of liberty in this country seems to me a great misfortune. Read over the Declaration of Independence and the Constitution of the United States and see if there isn't some truth in my assertion.

You readers of BETTER CROPS who are working with the farmers, you readers who are farmers and are working for better agricultural conditions, you know how difficult and discouraging it is when you are trying to put over some project that seems truly progressive and vital and some ornery cuss wants to throw a monkey wrench in the gears.

If he's just stupid, you can generally get on without him

but—look out! maybe he really has a good reason for not supporting you. He may start an active opposition. Then, if ever, you need to remember what liberty means.

Let's not assume that the man who doesn't agree with us is necessarily wrong and pig-headed. Unless we are free to disagree with others in an open, honest way, there isn't much sense in talking about our love of liberty.

WINTER WHEAT — The discussion of raising winter wheat profitably which appears in this issue, emphasizes again the importance of efficient farming.

I would like to know the man who succeeds in raising winter wheat most profitably this year. Not the man who makes the largest profit on his entire crop, but the grower who gets the greatest net profit per acre. In other words, the man who gets the best yield and quality at the lowest cost per bushel.

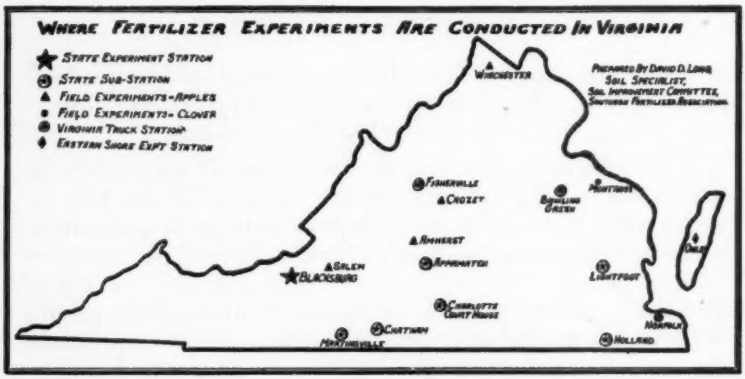
I would like to know who he is and how he did it, for he certainly deserves recognition. Perhaps it will be one of your neighbors. If so, I'd be glad to have you write me about him.

FINIS VOL. II — This issue completes the second volume of BETTER CROPS and the first year of its existence. An index of Vol. I, has recently been printed and a limited number are available for free distribution to readers. There are also a few copies of Vol. I, including the index, bound in black buckram which may be obtained for $3.25 postpaid by addressing the Business Manager, Mr. M. E. Hidden.

An index of Vol. II will be ready shortly as well as bound copies of Vol. II. If you desire either of these, we would appreciate your telling us as soon as possible.

Jeff McDermid

These are the fourth and fifth maps in our series showing where fertilizer experiments are being conducted in the South. They were prepared by David O. Long of the Southern Soil Improvement Committee.



VIRGINIA

State Experiment Station — Blacksburg.

Kind and quantity of fertilizers for various crops grown in the locality.

Lime Experiments.

Rates of Liming.

Kind and quantity of fertilizers for peaches and apples.

Sub-Station—Appomattox.

Kind and quantity fertilizers for dark tobacco and crops grown in rotation with dark tobacco.

Rotation in relation to crop production and Soil Improvement.

Pasture and grass investigations, find out suitable grasses adapted to pastures, their response to lime and fertilizer treatment.

Effects of the kind and quantity of fertilizers on apple and peach trees, and the production of fruit.

Sub-Station—Chatham.

Kind and quantity of fertilizers for bright tobacco and other crops grown on bright tobacco farms.

Sources of Nitrogen, phosphorus and potassium for bright tobacco.

Kind and quantity of fertilizers for cotton.

Sub-Station—Charlotte Court House.

Same as at Chatham, except experiments with dark tobacco.

Sub-Station—Martinsville.

Kind and quantity of fertilizers for general farm crops of the region.

Rates of liming for different crops.

Sub-Station—Fisherville.

Kind and quantity of fertilizers for general farm crops of the middle valley region of Virginia.

Rates of liming.

Sub-Station—Bowling Green.

Kind and quantity of fertilizers for sun-cured tobacco.

Crops relations experiment, complex fertilizer and crop rotation series.

Sub-Station—Lightfoot.

Fertilizer and lime requirements of alfalfa and other forage crops.

Hog pastures as means of pork production and soil improvement.

Sub-Station—Holland.

Kind and quantity of fertilizer and lime for cotton and peanuts.

Field Experiments—Montross.

Experiments to correct clover failures by lime and fertilizers.

Field Experiments — Salem, Amherst, Crozet and Winchester.

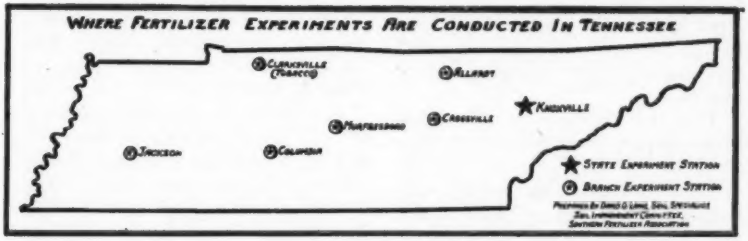
Effects of time of application on nitrogenous fertilizers on apple production.

Virginia Truck Experiment Station—Norfolk.

Kind and quantity of fertilizers for truck crops.

Sub-Station — Virginia Truck Experiment Station—Onley.

Kind and quantity of fertilizers for early potatoes and other truck crops.



TENNESSEE

State Experiment Station — Knoxville.

Fertilizers for corn, wheat, clover, grass and cowpeas.

Branch Station—Clarksville.

Fertilizers for tobacco—kinds and quantities and physiological effects of magnesium.

Branch Station—Jackson.

Fertilizers for cotton, corn, grasses and legumes — kinds and quantities—time of application of nitrate of soda to corn and cotton.

Branch Station—Columbia.

Fertilizers for cotton and corn with legumes, clovers and grasses in rotation.

Branch Station—Murfreesboro.

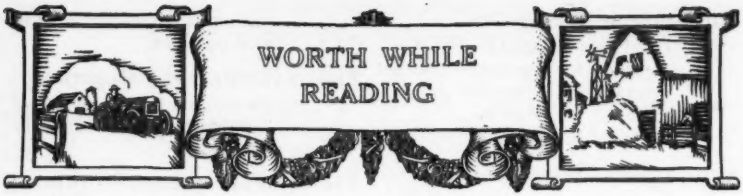
Fertilizers for cotton and corn in rotation with legumes and grasses. Special attention to quantity of fertilizer.

Branch Station—Crossville.

Fertilizers for corn, potatoes, oats in rotation with clovers and grass. Special attention to quantity of fertilizers.

Branch Station—Allardt.

Fertilizers for corn, potatoes and oats in rotation with clovers and grass.



A Successful Come-Back

Second Wind by Freeman Tilden. Published by B. W. Huebsch, New York. Price $1.50 postpaid.

In the words of the author this is "the plain truth about going back to the land." There are one hundred sixty-nine pages—fifteen chapters. The first ten chapters are written in rather serious narrative strain concerning Alexander Hadlock, a mathematician, who at the age of sixty-two lost his position, his fortune, and his wife, and then became a floater and went back to the land. Mr. Tilden has taken the facts from an actual experience, simply changing names and places.

The best portion of the book gives graphic word pictures of the struggles of Hadlock on various farms in Vermont state, mostly with the lazy "Farm Eaters" who do not use modern scientific agricultural facts and information.

To a County Agent the book is good because it brings out clearly the salient facts of modern methods as compared with the lack of methods of the average farmer. It shows the difficulty experienced by Hadlock in trying to persuade his neighbor, a farm eater, to use balanced rations, for example.

"Stone Pulling," the author says, "is the symbol of all the laborious plodding, patient work from which there are no immediate results except the accomplishment of the task itself. It is the hand labor, the toil that no machine has ever been invented to perform, the kind of labor that impels the half hearted adventurer to go back *from* the farm."

"The real farmer, the only man that can wring happiness out of his broad acres, is the man who is content to work at the things that throw no chips, that make no pretty show and that never seem to get done."

The author describes the satisfactions of Hadlock-security, love of approbation and the greatest of all — Self Development. "What Hadlock has done for his sixty odd acres is little compared with what his acres have done for him." "They have taught him self reliance. They have developed his initiative. They have impressed upon him a religion, which has taught him justice—justice to other men, to animals, to himself."

Mr. Tilden divides the *right* kind of city people into three classes;—the successful, the splendid failures and the second wind folks. The first two need no explanation. The last constitute the great majority in the city—the square pegs who have been trying to force themselves into round holes. "They are the middleaged ones who cold sweat at the thought of being relegated to the scrap heap. From this class comes the folks who are going to get their second wind-back on the land."

The author discusses very clearly the advantages and disadvantages of farm life. He asks the city man what is absolutely necessary to his happiness and what is desirable but not necessary.

The book will be an inspiration to plodding farmers anywhere, to tired and discouraged middleaged clerks in the city who are just about ready for the scrap heap. To those interested in a serious, accurate dis-

cussion of the back to the land problem, I would say: read this book.

F. C. SMITH,
County Agent, Westport, N. Y.

The Right Idea

Purdue Handbook of Agricultural Facts. Published by Purdue University Agricultural Experiment Station, La Fayette, Indiana, March 1, 1924. Loose leaf, flexible I-P 6-ring binder $2.00; cloth bound $0.75 and paper bound $0.50; 224-pages. New Facts in Farm Science by H. L. Russell and F. B. Morrison. Published by Agricultural Experiment Station, University of Wisconsin, Madison, Wis., March, 1924, not available for general distribution.

Here are two experiments in bringing science to the farmer's aid. A praiseworthy undertaking and one that has been carried out successfully in both cases.

Of the two, the Purdue Handbook is the more elaborate and comprehensive. It seems incredible that 224-pages could hold so much useful information. Every subject relating to farm life and agriculture from how to grade eggs to how to establish a bull association is covered in this volume. The reviewer cannot claim to have read it word for word—though it would be a liberal education in agriculture if one had the time to do so—but he has tested it on a variety of subjects and found that it presents them simply, concisely and conviently. Take alfalfa, for instance, and we have the following references: drainage of field, inoculation, insects, organic matter, plant food, seeding time, soil acidity, soil types, webworm. Under each of these heads you will find summed up the known facts on the subjects with reference to bulletins where there are any on the subject.

This progressive and useful piece of work reflects great credit on the Purdue Station. It is an example of that kind of cooperative spirit that we need to see more of. The editor, Mr. I. J. Mathews of Winamac, deserves special mention and particular commendation for the excellent index which makes the contents of the book easily available.

New Facts in Farm Science does not pretend to cover the same ground as the Purdue Handbook. It embodies Director Russell's annual report (1922-1923) and summarizes the contributions made by the station members during this period to farm science.

If anyone has any question in his mind regarding the value of our experiment stations, I would ask him to read this pamphlet for it proves conclusively the debt of agriculture to research workers. All phases of agriculture are touched upon. We may learn a new butter test, the effect of direct sunlight upon baby chicks, rations for brood sows, the results of alfalfa and fertilizer experiments and so on.

The book is well illustrated. One might wish it were indexed. The only guide is the table of contents and that does not reveal half the wealth of information contained in this work.

Both these works are notable because they endeavor to carry to the farmer the results of experiment station work in a form which will be of real help to him. In thus making readily available the results of scientific research they justify anew the values of the experiment stations and perform a useful social service.

B. H. P.

"Something about livestock" several of our readers have requested. So we persuaded Mr. D. S. Burch of the U. S. D. A., the father of the Better Sires—Better Stock campaign, which now has so many converts, to tell us about this work. His highly interesting article begins in our September issue.

By Ted Butlar

BETTER CROPS' Washington Correspondent

When your correspondent pulled out of Washington the forepart of July for a swing through the middle west and west, he was a bit dubious about the real condition and attitude of those who make up the agricultural area in the "open spaces" or "sticks," as some people in the east are prone to dub this section of the country. Agricultural conditions, to be sure, are not satisfactory, but as one South Dakota farm leader said, "Why, we have only started to fight."

The trip was given a successful start by a brief visit at Brookings, South Dakota, where an enthusiastic group of the American College Editors' Association was in annual session. It was gratifying to note the constructive manner in which these fellows are attacking agricultural college publicity problems, and the splendid progress which has been made during the past few years.

According to C. W. Pugsley, President of South Dakota State College and former Assistant Secretary of Agriculture, his state does not ask to be placed on any charity list. South Dakota crop conditions, this year, are above expectations, and casual observation would convince anyone that the state is rapidly adopting a balanced production program and speedily pulling itself out of the agricultural depression. If you want to pick a fight with a South Dakota farmer just tell him how sorry you are for him in his present plight. This state and other states are coming through in good condition, and don't forget it.

When the writer arrived in Omaha his pessimism got another severe jolt. Frank Taylor, President of the Omaha Grain Exchange, is optimistic over the 30 cent increase in the price of wheat and corn and gave proof that it was directly benefiting the farmer. With world production of wheat 13 per cent below last year and Canada short by over 32 per cent, Taylor is firmly convinced that wheat prices will rule higher, even though the coming crop might contain a high moisture content due to heavy rains.

Further optimism was in vogue at the Omaha Livestock Exchange. Hog prices were ruling above the $8 mark and were the highest since September of last year. On the day your correspondent visited there, hog prices jumped 30 cents a hundred. It was the weighted opinion of authorities on the Omaha market that the cycle of hog prices was on the upgrade after the period of low prices and the healthy domestic and foreign demand for pork, coupled with more normal production, gave the middle western farmer a silver lining for his cloud.

It was quite apparent that crop production throughout the middle western states was on a more normal basis than it has been since the war. Marked adjustment has been made in most crops, particularly hogs and wheat. No matter what might be said to the contrary, this noticeable adjustment in production has been largely responsible for the noted

increases in the prices of many crops. A. F. Stryker, Secretary of the Omaha Livestock Exchange, by a simple problem of mathematics, on the basis of livestock receipts for the week previous, figured that increased prices had placed thousands of dollars into the pockets of farmers who needed it. Although corn is some two weeks late it is picking up rapidly. With this crop assured and a normal supply of feeder cattle and lambs in prospect, it is mighty difficult for the proverbial pessimist to find a hook to hang his arguments on.

Your correspondent returns to his desk feeling better. Agricultural depression and suffering during the past four years had been acute and the farmer has aged because of it. There is only one thing that will bring agriculture back and that is price. That prices are on the upward trend is encouraging. The recovery is genuine.

More Spraying

(*From page 14*)

the trees in proportion to the pressure employed.

The trees were large, 34 year old apple trees carrying an average yield for 1923 of 25 bushels per tree at harvesting time.

1. The 190 pound pressure row showed 87.88 per cent of the tree run fruit free from scab and worm injury.

2. The 250 pound pressure row showed 91.64 per cent of the fruit free from scab and worms.

3. The 350 pound pressure row showed 94.96 per cent without scab or worms.

These three rows were sprayed with liquid lime-sulphur and paste arsenate of lead at the rate of 5 gal. —8 lbs.—200 water.

The average for the season was 14.2 gallons of diluted spray material applied per tree for all pressures.

Over 19,000 apples were examined by James L. Kraker and the writer under more critical grading than is employed in any fruit section. Six applications were made.

Part of the orchard as sprayed by the owner, using 4.96 gallons per tree as an average for the season of six applications at 350 lbs. pressure, showed but 75.73 per cent of the tree run crop free from scab or "sting" injury.

MANY fruit growers lay the blame for poor control on the material used or the strength employed. This, undoubtedly, accounts for the fact that growers are constantly on the lookout for, or actually trying some new spray material. These growers should look to the number of tanks they are applying per acre and the pressure they are using as the cause for their trouble.

Very few growers can be found who know how many gallons they are using on each tree, or whether or not they are using less material for the second codling moth application than they did for the calyx period. The writer has examined the books of several commercial growers and found that they were using about the same number of gallons and pounds as they purchased when the orchard was ten years younger.

Enormous profits have been made from fertilizer applications, better colored fruit has resulted from pruning and thinning; but proper benefits can come from such orchard expenses, only when the grower has perfected his spraying practice to give the highest practical degree of protection to his crop.

If a grower cannot afford to purchase increased pressure and pump capacity, he can certainly reduce the size of the disks in the nozzles and even though it takes more time to apply the proper number of gallons to each tree, he can, if he desires, have at least 80 per cent of all the fruit on a tree at harvest time free from controllable insect and disease blemishes.

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Please send me full information regarding the new Corona Four, together with the address of the nearest Corona dealer.

Name.....

Address.....

They Made Profits by Pioneering

(*From page 25*)

one-crop areas are much better adapted to diversified production. Western farmers who before 1919 were straight wheat growers, cropping their land almost continuously, are now growing sweet clover for forage, building up definite crop rotations, raising corn, and developing purebred herds of dairy cattle and droves of hogs.

John B. Brader, of Oswego, Kan., used to be a large wheat farmer. As a wheat farmer he prospered in good times, but found that bad times made a severe dent in his financial position. In 1921 he decided on a new policy. He rented out a part of his land and raised feed for Jersey cows and Leghorn chickens on the remainder. This policy put him on Easy Street. Records show that the average production of his cows increased from 250 pounds of butter-fat in 1920 to 333 pounds in 1922, and the return above feed costs was $98 each. His Leghorn flock returned over $2 each. From 17 cows and 350 hens in 1923 his returns were approximately $2,600. Two of Mr. Brader's children are in high school, his farm is paid for, and he has been elected president of a bank. Fifteen years ago he was a renter. "And," he says, "the cow, the sow and the hen did it."

Possibly, however, Mr. Brader is not allowing enough credit to his own good farm management. Successes in farming that seem due to crop readjustments should often really be attributed to superior management. Crop readjustments must be wisely planned, and they must be timely, to produce good results. Time, in fact, is the very essence of effectiveness in crop readjustments. A cropping plan that was advisable last year may not be advisable this year. It is risky just to follow leaders, especially if the leaders have a long start. Such a course may mean changing from one crop to another when it is almost time to change back again. Many farmers today, impressed by the example of neighbors who have been ahead of them for two years or more, are rushing into dairying and poultry raising, despite indications that these lines may be overdone. These men may get a painful reminder that success in farming is not to be found in any general formula of readjustment, but only in sound management and in constant adaptation of crop programs to the ever changing market situation.

The time factor in crop readjustments is never as favorable for the imitator as for the initiator. As the number of persons making readjustments increases, the benefit to the individual gets less. It does not, however, wholly disappear. Agriculture as a whole gains when its different branches of production are brought into right proportions. Waste is lessened and markets are stabilized, and that is always an advantage. Accordingly the leaders in readjustment are entitled not only to the special financial rewards that naturally accrue to them, but to the thanks of the farmers and the Nation, for what they are doing to promote a healthier general agricultural situation.

It is only necessary, in appraising the value of their service, to remember that what has brought success to them might not bring an equal success to the general body of farmers, should they try it out. In other words, what the leaders in crop readjustment have shown is not the value of any specific plan of production but rather the value of an alert readiness to shape farm programs in harmony with changing conditions, and to take time by the forelock in doing so.

A Giant Waits to Serve You

(*From page 23*)

our oil, and our coal, our power, too, is limited. Too often we think of our power resources in terms of water power, which we shall harness when our coal is gone. That is a harmful idea, for if all the potential water power in the United States were harnessed today, it would not operate the machines now in use. Steam power must always supplement water power. That means that when our fuel is gone, our power supply will become inadequate. Every day that we allow our water power to go to waste by not utilizing it, we are wasting coal; for we are burning coal to do work that water should do. And whenever we burn coal inefficiently, we further waste our supply.

How efficiently do we use our coal? To begin with, we haul it vast distances, at a terrible cost in coal used for transporting it, and then burn it in the most wasteful way. Even the best of our isolated plants utilize hardly more than 16 per cent of the energy in the coal. And they burn twice as much coal as would produce the same amount of energy in large central power stations. In other words, it has been taking four pounds of coal to produce one horse-power in isolated plants. Recent improvements have cut that figure to something like three pounds per horse-power. But in large, central generating plants, such as should be constructed near the mouths of the mines, one horse-power could be produced by burning one and a half pounds of coal.

Again, in the isolated plants that now produce our power, no by-products are recovered. In our coke ovens the coal is processed and these by-products recovered. But not one pound of coal used for fuel in America is so processed. The result is the absolute loss of all the by-products. These are ammonia, useful for fertilizer; tar, for making roads, etc.; hydro-carbons, useful in making dyes and otherwise in industry; and other products. We throw them away as smoke and gas, and their value is one billion dollars a year!

Formerly it was not possible to make power in great central stations and transmit that power long distances. Hence the multiplicity of power plants. The power had to be where the machinery was. But recent developments in electrical power transmission have stretched the power belt. Now it is possible to transmit energy hundreds of miles, with very little leakage of power. That makes possible the generation of power in huge central stations where power can be made cheaply, and the transmission of that power to places where it is needed. Our waterfalls can now be harnessed, no matter where they are located, and the power transmitted long distances to the cities, towns, and farms where it is needed. This should be done at once, to conserve coal. Whatever power is then lacking can be supplied by great steam plants located as near the mouths of the mines as water conditions permit.

When this is done, power can be produced at prices undreamed of to-day. Power generated by falling water is incredibly cheap. With coal freights practically eliminated, with the economies possible in such large-scale operation, and with by-product recovery to reduce power production costs, steam-generated electricity would cost hardly more than water-generated electricity. Steinmetz, the great electrical engineer, said that the creation of such a power system would make electricity so cheap it would not pay to have meters.

Yet the economies outlined are only a part of the economies that

would result from the creation of such a Giant Power system. There would be no coal for the railroads to haul. One-third of all railway freight is coal. The cars must be hauled back to the mine empty, adding to the freight burden. The coal used by steam locomotives—isolated power plants of the most wasteful type—would be sufficient to run vast industries. This coal would be saved, for a direct result of the creation of such a power system would be the prompt electrification of the railroads. The saving in freight capacity, through getting rid of coal freights, would put the railroads on their feet once more. Admittedly they are not now able to cope with the freight situation in times of high prosperity. We all recall the freight embargoes of recent years, when the roads, clogged with goods they could not handle, refused to accept further shipments. The farmers suffered not a little through these embargoes. So did the merchants. So did we all. By taking away the coal freight, and only by so doing, can we enable the roads to handle all the freight offered when the next wave of prosperity comes.

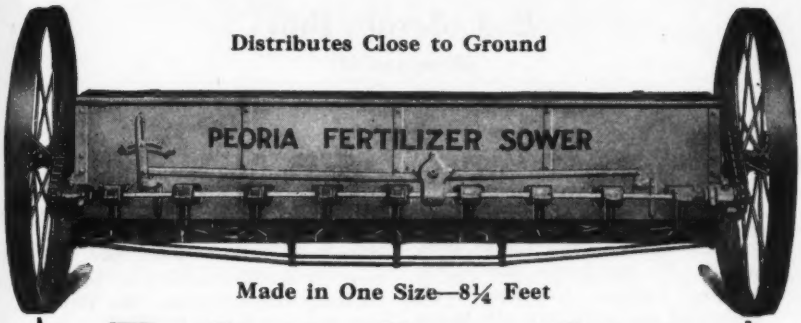
Now, the accomplishment of these things is possible only if we keep sharp hold of the situation and do not give our power resources away, as we gave away our coal and oil and timber lands, to individuals, and if we develop our power resources with a view to the common good rather than with the idea of benefiting some individual, or corporation, or particular section or state.

Naturally our country divides itself into a number of power regions, topographically determined, each of which should be a power pool or unit. That is, all the power that can be generated in a district should be fed into a common pool and tapped out wherever needed. That is the sense of the situation. That is the only way to serve all the people and effect the greatest economies and give the widest service.

But in addition to the natural selfishness of men, there are some foolish state laws and narrow local notions that stand in the way of such power development in places. That is particularly true in the Northeast section — Maryland northward and Ohio eastward, which is a natural power district. Maine prohibits the exportation of power from the state. Connecticut forbids the importation of any into the state. New York claims its power is for New Yorkers only. Such narrow ideas must be broken down. Pennsylvania has the right idea. Realizing that her coal measures make her really the keystone in the power arch of this section, she is planning to develop her power resources with a view to the common good. Governor Pinchot got the state legislature to create a Giant Power Survey to examine the state's power resources and recommend plans for their development along broad, patriotic lines.

The outstanding example of pooled power is the far West. The war brought the threat of insufficient power to run the war industries. A power dictator was created. He at once linked up all the power lines along the west coast. The result is a power system 1,200 miles long, which will soon be increased to 1,600 miles. This insures universal service at low rates, and will give the West a great advantage over other sections unless like measures are taken. In California the farms are electrified as they are nowhere else. Eighty-three per cent of all California homes have electricity. Only the remotest farms cannot get power. If farms generally are to have power, it can come only through the development of such Giant Power systems, the transmission lines of which will cross the land like main highways, with distribution lines running hither and thither to convey power wherever it is needed.

Distributes Close to Ground



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The use of fertilizer has become a necessity to modern agriculture. Farmers of the Eastern States have realized for years the profit to be made from the use of fertilizers, and now the Western farmer is rapidly learning to look upon fertilizer as an "investment" rather than an "expense."

The American farmer is learning that by taking everything from his soil and returning nothing, he is headed straight for agricultural bankruptcy, and that every dollar spent on good fertilization is better invested than a dollar in the savings bank.

But fertilizer, to be most efficient, must be mixed with brains. It must be properly applied.

For many fields and many crops, a broadcast distributor offers the best solution of the problem of how to make the application.

There is no distributor on the market that can equal the New Peoria. It took years of actual experimenting in the field to finally produce this high-grade distributor. It bears little resemblance to the makeshift box-wheels-and-axle contrivances commonly found on the market.

We also manufacture Fertilizer Drills in all sizes.

For Catalog and Prices Address

Peoria Drill and Feeder Co.

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Exit Scrub Bull

(*From page 31*)

Years ago, as a young man on a homestead in "Progress" County, I began in the best way I knew how to take an honest living from the soil, and to care for my wife and child. For two years we barely made a living; Then things grew worse. My two horses were stolen by the Indians, the hot winds destroyed my crops, my wife began to fail, and the baby became thin and gaunt. All we had left was three scrawny cows and A Scrub Bull.

Spring came, I had to yoke the bull to the plow. He lent his every ounce of strength and vitality to the task I had learned to dislike. He seemed to realize and want to help. His courage and industry raised my hopes. Things grew where we plowed and sowed. The three cows did their best that year by furnishing three scrub calves and a scanty supply of milk. Things went better and we were soon happy.

I have been a scrub as a farmer. I have failed to fertilize my fields, rotate my crops, or spray my fruit trees. I have given little time or thought to my bull and scrawny cows. They have had food enough to keep them alive although not a balanced ration. I have been told what was right to do by prosperous neighbors, and have been shown by our county agent but have paid no attention to them.

How I hate to think of it now. My farm is in poor condition, I leave nothing for my family, and as I lay here on my deathbed news of the prosecution of my old and true friend, A Scrub Bull, comes to me. Had I done what was right, had I given him proper care and attention, had I used good sires, this would not have happened. It is all my fault. May those who now hold his life in their hands, read these words and spare him. With my last breath I say, "Spare him!"

A BAD FARMER.

THE Plaintiff then arises for his argument against A Scrub Bull. Witnesses have testified pro and con. A shuffle is heard in the hall outside, and in comes the Bailiff with one of A Scrub Bull's offspring. At another entrance A Pure Bred Bull and his offspring are lead into the ring. The sight is appalling, the comparison touches the little spark of bullyness still burning in the nature of A Scrub Bull. Realizing his guilt, he confesses through his interpreter, in the following manner.

"I am A Scrub Bull. Mine is no ancestry of red-blooded pedigree tracing back to the ark. I was sired by a scrub, dam'd by a scrub, and sometimes I think owned by a scrub. My sire's greatest accomplishment was to furnish dried beef to the hungry, my dam never paid her board. As for me I am a runty, slabsided, low backed "hunk" of beef. My owner tolerates me only because of a lack of understanding. He is beginning to see my short comings. I can see the handwriting on the wall. My tribe is doomed."

The Plaintiff has won the case. Remarks are useless in the face of this confession, and the sight of living evidence. The verdict returned by the jury was as follows; "We the jury duly empanneled and sworn in the above named case, find the defendant guilty as charged and condemn him to be shot. We also request that all living relatives residing within the borders of 'Progress' County 'Forward' State be given a like sentence within the shortest possible time."

A Scrub Bull is lead out of the room. A shot is heard outside, and a thud, as A Scrub Bull meets his fate at the hands of the executioner.

How Potash Pays in Alabama

(*From page 21*)

acre, while an additional 50 pounds of muriate of potash produced only 11 bushels. This gives a return of $26.00 per dollar invested when sweet potatoes are valued at 50 cents per bushel. The returns from acid phosphate and nitrate of soda were $13.15 and $7.44, respectively. On this soil "potash pays" more per dollar invested than the other two plant food elements combined.

On Coastal Plain soils a fertilizer mixture made up of 480 pounds of acid phosphate, and 400 pounds of cottonseed meal, together with 50 and 100 pounds of muriate of potash was used for sweet potatoes. Muriate of potash at the rate of 50 pounds per acre in above mixture increased the yield 21 bushels and at the rate of 100 pounds, only 18 bushels per acre. Based on the above yields the value of a dollar's worth each of acid phosphate, cottonseed meal ($45.00 per ton) and muriate of potash is $8.70, $0.77 and $10.50, respectively. As was true of the Appalachian Plateau soils potash gives a larger return for the money invested than the phosphatic and nitrogenous fertilizers combined.

When used with acid phosphate, nitrate of soda or cottonseed meal at above rates per acre, muriate of potash in excess of 50 pounds per acre is not profitable. The fact remains, however, that "potash pays" and pays well for sweet potatoes.

Sugar Cane

CONSIDERABLE experimental data have been collected by the Alabama Experiment Station based on regular fertilizer tests with sugar cane on the Lower Coastal Plain soils. In these a mixture of 480 pounds of acid phosphate, 400 pounds of kainit ($14.00 per ton) and a nitrogenous combination of 400 pounds of cottonseed meal and 100 pounds of nitrate of soda, was used per acre. This mixture which cost approximately $20.00 increased the yield 140 gallons of syrup, worth $70.00 when valued at 50 cents per gallon. Based on the above increased yield and the above rates of application, one ton of acid phosphate increased the yield of syrup 208 gallons, one ton of cottonseed meal and nitrate of soda in above combination, 123 gallons, and one ton of kainit, 265 gallons; or gave a return per dollar invested of $8.00, $4.45 and $9.46, respectively.

Result Demonstrations.

ANOTHER interesting phase of the potash question as it relates to Alabama conditions is the constant and rapid increase in the amount of potash used throughout the north half of the state. This half of the state is composed largely of heavy land with red clay subsoils relatively rich in potash. There has always been a general impression among farmers and agricultural workers that potash could easily be left out of fertilizer mixtures for cotton in this section. The results of recent experiments conducted in this territory were so radically different from the old teachings that agricultural Extension workers have encountered some difficulty in converting farmers to the new method of fertilization.

The last three years have brought about some wonderful changes. County agents have established and carried to definite conclusion hundreds of demonstrations based on these experimental data. These demonstrations have shown conclusively that "potash pays" under cotton. As proof of this the following facts are submitted.

On one demonstration in a red land county where potash alone was applied to cotton, farmers visiting the demonstration were hard to convince that nitrate of soda had not been applied through mistake.

ANOTHER interesting case is of two farmers owning adjoining red land farms. One farmer fertilized 144 acres with acid phosphate, nitrate of soda and kainit and harvested 99 bales of cotton while his neighbor on 135 acres of similar land fertilized with acid phosphate and cottonseed meal, harvested 33 bales. As a result every farmer for miles around will use potash in his fertilizer mixture for cotton in 1924. In 1922 this county did not buy any potash as such, but in 1923 a few farmers bought 35 tons of kainit cooperatively, very largely for demonstration purposes. As a result of the increased yields obtained from this small tonnage the 1924 cooperative purchase amounts to 242 tons of kainit. Another typical red land county increased its kainit tonnage from 0 in 1922, to 83 in 1923 and to 605 in 1924. Many other examples just as interesting could be enumerated.

Taking the total amount of potash, expressed in terms of kainit, bought cooperatively by the 33 counties making up the north half of the state we find that the tonnage has increased from about 200 in 1922, to 1,397 in 1923 and to 4,826 for 1924 season.

"The proof of the puddin' is in the eating," and the proof of the value of experimental data is in the continual and ever increasing application by farmers of the principles evolved.

Establish the fact that "potash pays," then demonstrate this fact to the masses and the future will take care of itself.

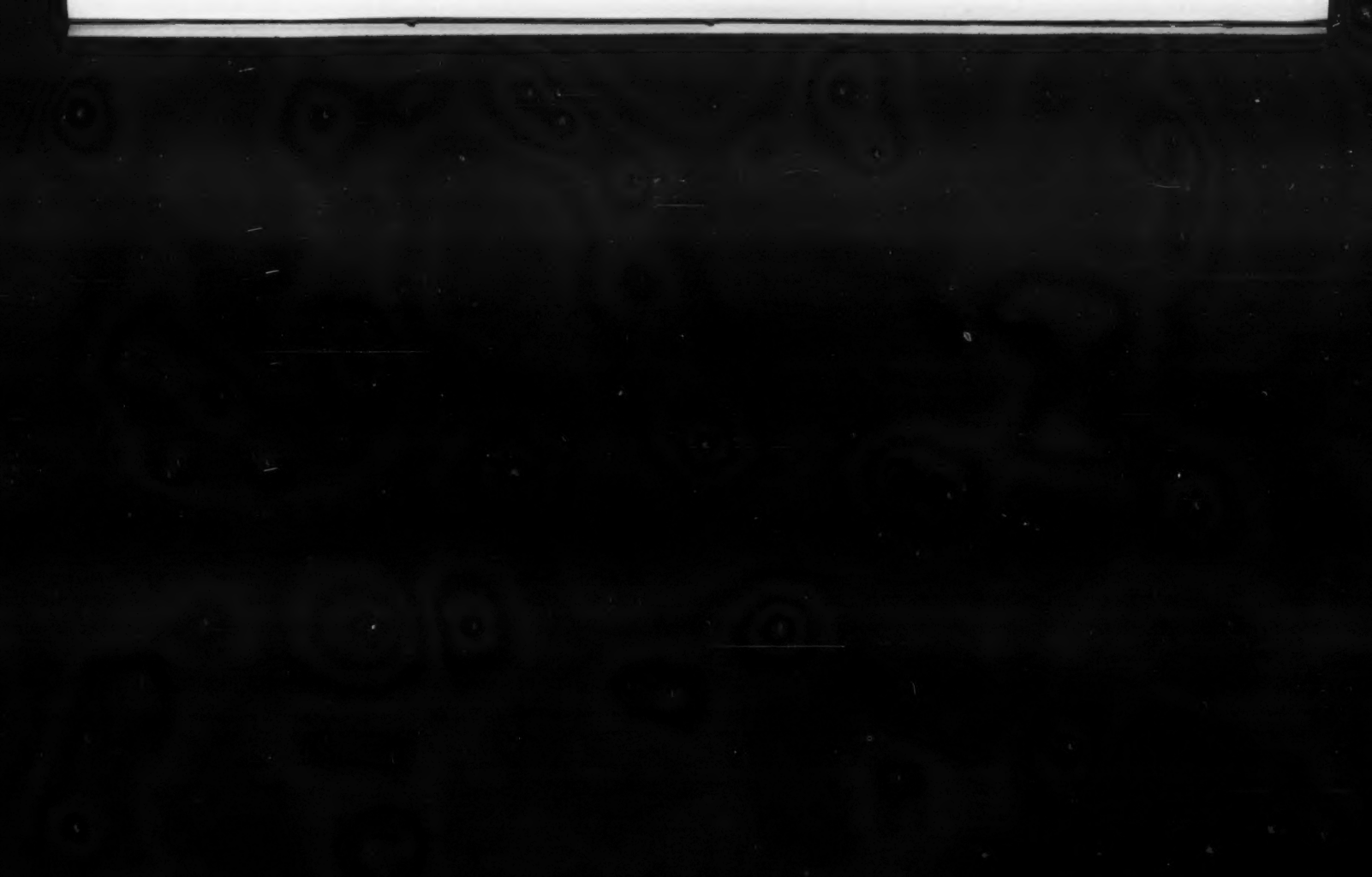
Tax on Fertilizers Reduced

The State Board of Agriculture is saving money for the Kansas farmers and stockmen, in the administration of the feedstuffs and fertilizer laws. The first saving was effected in the reduction of the cost of feedstuffs analysis, and the second is in the reduction of the fertilizer tax just now announced.

The last legislature transferred the administration of the fertilizer law from the Director of the Experiment Station at Manhattan to the Secretary of the State Board of Agriculture at Topeka.

Upon getting into the real work of administering the law it was found that in the seventeen years since the law was enacted conditions in Kansas have changed quite materially in some things affecting the law, and affected by the law. The secretary therefore called a conference at his office in Topeka and asked representatives of some of the leading fertilizer manufacturers to meet with him and the officials of the Control Division of the Board in order to go over these matters and come to a mutual understanding. Representatives were present from Chicago, St. Louis, and other centers of the fertilizer industry and it was decided with the approval of the Attorney General that a new tax tag good for 100 pounds is to be issued. This will reduce the tax on fertilizer for the reason that formerly only a tax tag good for 200 pounds was issued and when this was used on a 100 pound sack of fertilizer, which is the way much of the fertilizer is sold nowadays, it caused the payment of a tax of 50 cents per ton instead of the 25 cents per ton contemplated by the law.

Various other matters were discussed and an understanding reached which will have a tendency to simplify the administration of the law making it more practical and better for both consumer and manufacturer.



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Nitrate Agencies Co.

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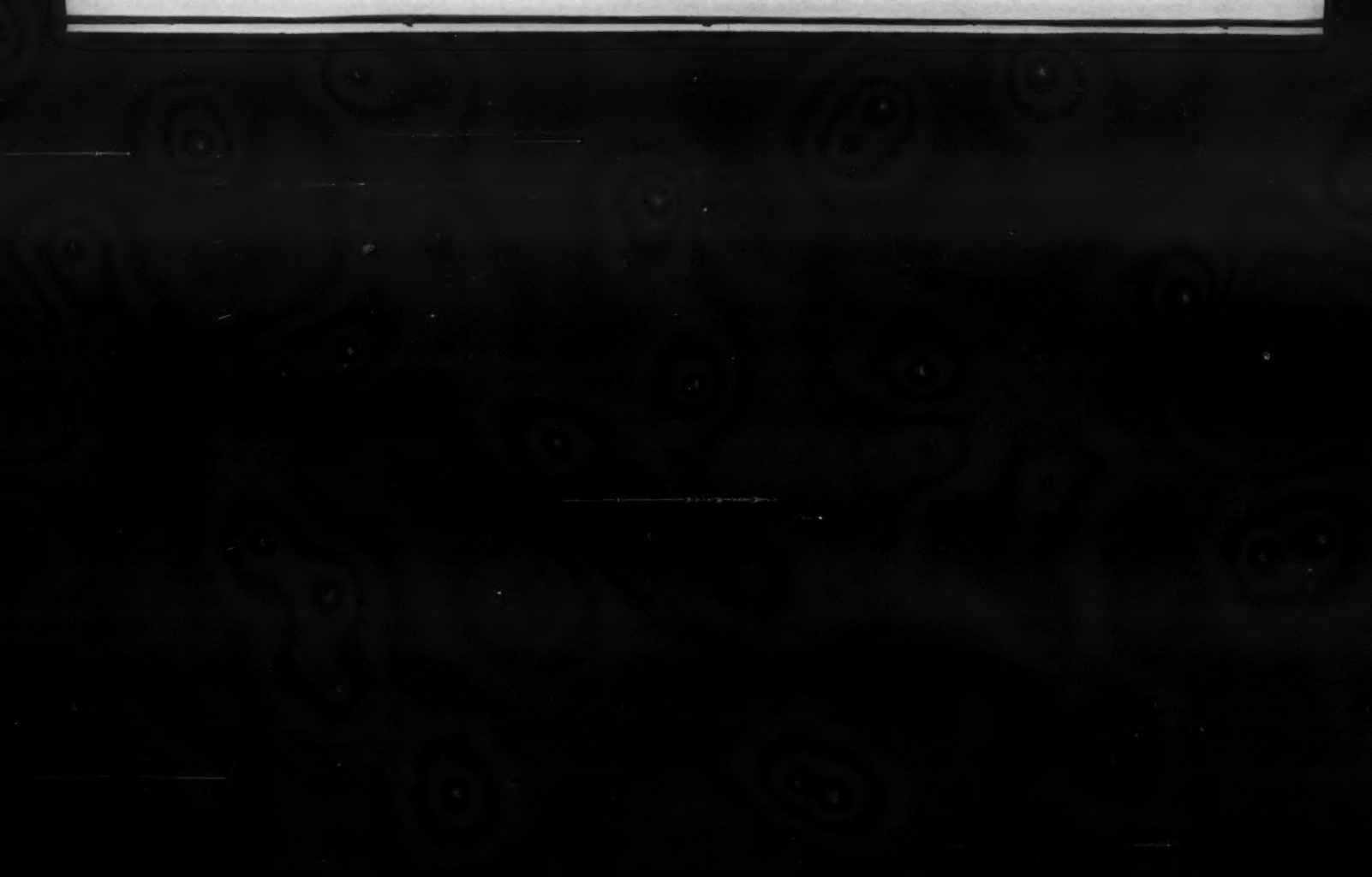


Winter Wheat

(*From page 13*)

(*c*) treatment of the seed for smut

(*d*) use of fertilizer

(*e*) control of Hessian Fly.

Wheat is a delicate feeder which thrives best in a fairly deep seedbed with a fine, well packed bottom and a mellow top free from surface trash. That kind of seedbed is made by (*a*) early plowing, which gives the land time to crumble and settle (*b*) occasional harrowing during the summer to reduce surface evaporation and kill weeds and (*c*) making a mellow surface just before sowing. You cannot possibly make the best seedbed by late plowing or by failing to destroy weeds after early plowing. A rank growth of weeds leaves the land poor and dry. When they are plowed under late they make the land so loose and porous that young wheat is liable to be damaged by drying out or freezing. Thorough experimentation has proved the value of early plowing and summer fallowing as a profitable means of increasing yield.

Varieties of wheat are as different as people. A good man in the right place is a shining light; in the wrong place his light is dim. Between the yields of good varieties and poor ones there is often a difference of 5 to 10 bushels per acre. But misplacing even a good variety often makes a poor crop. Be careful then to use the right variety in the right place. It will cost no more, but will increase the yield profitably. Your State Experiment Station can tell you where different varieties belong.

Those terrible scourges of wheat, loose smut and stinking smut, cut profits by untold millions every year. Disease-free seed and the formalin treatment are simple, inexpensive means of avoiding the greater part of these losses. A postcard to your Experiment Station will bring advice on how to save that 5 to 15 per cent of your crop, which may otherwise fall in blackened ruin before these diseases.

IN nearly every community someone has learned that fertilizing wheat pays. Even when wheat is grown out of rotation a dollar spent on fertilizer will net a profit of one or two dollars an acre; and when wheat is rotated with clover, corn, and oats, your dollar's worth of wheat fertilizer will earn several dollars in increased yields. The most profitable quantity of wheat fertilizer will depend upon how well the soil has been managed, the quantity of manure applied, and the number of legume crops grown. Tell your Experiment Station these conditions and ask for advice on this point.

The Hessian Fly is a terribly destructive pest, but easily controlled. It is partly controlled when you plow wheat land early, for large numbers of the fly are then buried and destroyed. After that, occasional harrowing to destroy surface growth and so deprive the fly of summer food, followed by delayed seeding in the fall, which puts the young crop out of the fly's reach, will largely settle your fly problem.

There is little or no profit in 15-bushel wheat; there is good profit in 30-bushel wheat. Some land will make 30 bushels or more without good farming, but no wise farmer will miss the greater profit that comes from aiding even good land. And the average man who now farms in an average way on average land will find some financial comfort in the five good practices I have suggested.

Firman E. Bear

Associate Professor of Soils
Ohio Experiment Station

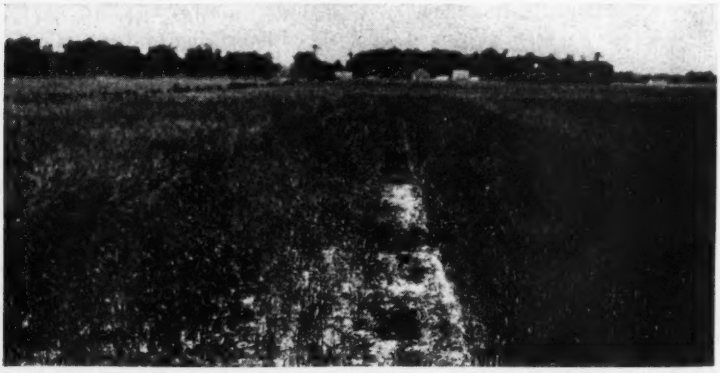
OHIO stands in the center of a group of states which produce the highest average acre yields of winter wheat. North of these states lies the spring wheat area. South of the Ohio River, the climatic conditions are somewhat less favorable to the wheat crop. Within the state, the center of highest wheat yields is found in the northeastern portion of the state. Wayne County, of which the county-seat is Wooster, is one of the outstanding wheat counties of this area.

It happens that the main experimental farm of Ohio is located at Wooster, and that records of the effects of various soil treatments and of the weather as related to the yields of various varieties of wheat on this farm are available covering a period of more than a quarter of a century. In favorable seasons wheat yields of over 40 bushels per acre are not uncommon on well managed plots on this farm. The record yield is over 58 bushels.

From the weather records it appears that October, January, March and June are the critical months. Relatively, a dry October; a warm, dry January; a cold, wet March; and a wet June seem to favor high yields. Under such conditions it is probable that the root systems of the wheat plants become better established in the autumn; the temperature is maintained above the critical point in the coldest month of the year; there is a rather sudden break between winter and spring; and there is sufficient rainfall to prevent the lack of water from being a limiting factor while the heads are being filled.

Notwithstanding the weather, it is possible to raise the average yields of wheat by systematic management of the soil and by the use of varieties or strains of wheat which have been selected as being best adapted to the conditions which obtain. Thus in the five year rotation fertilizer tests at Wooster, the average yields of wheat for the period from 1906 to 1918 have been 12, 15½, 25, 30½ and 32 bushels per acre on the untreated; limestone; limestone and acid phosphate; limestone, acid phosphate and nitrate of soda; and limestone and complete fertilizer plots, respectively.

IN an attempt to determine somewhat more specifically the fertilizer



Wheat field of P. R. Edgerton, Marion, Indiana. Note contrast between plat where no fertilizer was used and one which received a complete fertilizer. The first yielded 6.5 bushels per acre; the latter 33.8 bushels per acre.

treatment best suited to the needs of the wheat crop, when grown on the Wooster silt loam soil, a field test was begun about 10 years ago in which fertilizer analyses were employed which earlier investigations had indicated might be more nearly suited to the needs of the wheat crop than were those which had been employed previously. From the data obtained from these tests it seems logical to conclude that a 2-14-2 or similar fertilizer analyses can be expected to satisfy requirements both as to yield and as to the value of the increase above the fertilizer cost. It is necessary to add that this suggestion applies to soils on which the clover crop appears regularly every third or fourth year in the rotation, but which receive little or no manure.

Soils which have not been clovered, and which are therefore in a low state of productivity, will probably require a 3-12-4 or similar analysis for best results. Those which are manured regularly, in addition to growing good crops of clover, would probably produce satisfactory yields of wheat in favorable seasons if the fertilizer was confined to acid phosphate. Black soils may yield sufficient nitrogen and potassium for satisfactory wheat yields but most light colored soils, unless manured and clovered, are likely to show considerable response to all three of the fertilizer elements.

Three common varieties of wheat in Ohio are known as Fultz, Poole and Gypsy. Selected strains of these varieties which have been named Trumbull, Portage and Gladden, respectively, have been found to outyield the mother varieties by several bushels per acre. Farmers who use these improved strains of wheat and who maintain their soils in a fairly high state of productivity by the use of clover, manure and fertilizer, should have little difficulty in maintaining their wheat yields at an average of over 25 bushels per acre. Many factors are involved in determining the profitableness of growing wheat, but a 25 bushel yield under average conditions is likely to make the wheat crop worth while on the general farm.

H. W. Warner

Extension Associate Professor of Soils
Iowa State College of Agriculture

ABOUT four years ago Alfred Meilike, a young farmer in Warren County, Iowa, agreed to put on a phosphate-on-wheat demonstration, cooperating with his county agent and a field man for one of the fertilizer companies.

The fertilizer was applied, the wheat sown and the treated plot harvested and threshed separate from the rest of the field. The test plot gave an 11 bushel increase for the fertilizer treatment plus better quality of grain. The next year a carload of fertilizer went into that community.

"Nothing unusual about that," someone may say.

Not at all. On the contrary, similar results might be expected on the great majority of winter wheat fields. But it should be remembered that the one thing that persuaded Mr. Meilike and his neighbors to start the use of fertilizers for wheat was the simple little one-acre demonstration plot.

The point I would make in citing this experience is: help farmers to learn how to reduce production costs. Over a great part of the winter wheat growing sections fertilizers are not generally used, although experiments have conclusively proven that their intelligent use is one of the sure means of increasing profits for the winter wheat grower.

Unless a farmer is using fertilizer on his wheat, there is good reason to believe that he should try it out to his own satisfaction, at least.

Therein lies an almost unlimited field for demonstration or trial. I have no statistics to support this statement but it is my belief that fully 50 per cent of the winter wheat growers have never used phosphates or other commercial fertilizing materials. In Iowa, the fertilizer users represent one or possibly two per cent of the wheat growers. The same is likely true of many other parts of the winter wheat belt.

Again, he may be using a fertilizer entirely unfitted to his particular requirements. This constitutes another broad field of educational possibilities.

Small-scale field tests will not at once result in greater profit from the 1925 winter wheat crop. The immediate profit and the important one—is in the experience and knowledge gained by the men conducting such tests and by their neighbors who have occasion to see the results. In other words, a field trial doesn't sell much fertilizer but it may sell the "fertilizer idea." Once this idea is demonstrated and fixed in the mind, the using of the fertilizer as a farm practice easily follows.

Demonstrations, or trials, need not and in fact, should not be elaborately planned or minutely detailed pieces of work. Complicated arrangements and too numerous treatments of plots only serve to confuse the ones for whom it is intended. One fact forcibly brought out is worth a half dozen which leave the mind in a state of partial doubt or confusion. Simple arrangements of plots enable the farmer to harvest and thresh separately the untreated and treated portions of the field. One acre plots are good. Three or five-acre plots are better.

"In numbers there is strength" applies equally well to the matter of putting across the fertilizer-for-wheat program. Ten 5-acre field tests are worth many times more than one 50-acre treated field.

Fertilizer requirements, both as to kinds and amounts, afford an almost unlimited opportunity to the fertilizer industry, to county agents, to agronomists, to bankers and to all others directly interested in making winter wheat growing more profitable.

The suggestion offered in these paragraphs may not make anybody more profit in 1925. But it may help in making the winter wheat crop of 1926 or 1936 a more profitable venture for some who have not yet learned the needs of their soil.

T. A. *Kiesselbach*

Agronomist
Nebraska Experiment Station

USE of the best farming methods applicable in any community will do much to put the growing of winter wheat on a more profitable basis. For the individual farmer, high yield of good quality grain, produced at relatively low cost means greater profit. This result can usually not be brought about to its fullest extent on the average farm in a single year, since the current crop is influenced to a considerable extent by the character of farming for several years past. Now is the time, however, to plan the farming system and lay the foundation for the greater and more profitable production which is certain to ensue. On many farms this means primarily a more effective use of crop rotation, and somewhat more feeding of livestock for the purpose of building up the organic matter content and available fertility of the soil. Such a rotation system should contemplate the use of more grass and leguminous pasture and meadow crops which are suitable for short time rotations. Where adapted, the biennial clovers are especially suitable. The queen of all forage crops, alfalfa, should be utilized wherever practicable, changing to other land about every four years rather than leaving down in long time permanent

meadows. Such judicious use of forage crops in the rotation wherever the best experience has indicated their use desirable, will in itself often add from 20 to 50 per cent to the yield of winter wheat as well as of other crops grown in the rotation. These forage crops are in themselves among the most profitable crops grown.

In some states the profitable use of commercial fertilizers has been fully demonstrated, and their judicious use in such regions should serve to increase profits from wheat growing. In other sections, such as Nebraska, which have been more recently brought under cultivation, the use of commercial fertilizers has not become profitable, and fertilizer applications should in general be restricted to barnyard manure and crop residues.

The character of the tillage given in preparation of the seed bed for winter wheat commonly influences the productiveness of the crop. Especially is this true in the matter of timeliness of plowing and the thoroughness of preventing undue weed growth. Relatively early seed bed preparation enhances bacterial action and the natural formation of available nitrates in the soil. Loss of soil moisture through weeds is thereby also checked and the land is made more receptive to rainfall. By early plowing the seed bed is also likely to become more compact by seeding time, through natural settling processes. It is a well established principle in regions of occasional winter killing that winter survival is superior on well settled seed beds.

A great deal has been accomplished in recent years largely through the efforts of the U. S. Department of Agriculture, and various Experiment Stations, in the production of higher yielding varieties of winter wheat. Every farmer should take advantage of these improved sorts and thereby increase his yields, at very little added cost. As a very notable illustration of such recent introduction, Kanred wheat may be cited for Kansas and Nebraska. Due to its relatively greater rust resistance, winter hardiness and higher grain yields, this variety, disseminated less than ten years ago, has made money for those farmers in this territory who have been growing it. Together with this recommendation of superior varieties, we should sound a warning of conservatism to avoid highly priced seed of exploited varieties whose local value has not been fully established.

Wheat containing much rye is discriminated against on the market. Such loss should be avoided by the planting of pure seed, which can be done with little added cost. An additional reward for planting such seed will be a greater pride in the growing crop.

In sections of the country where stinking smut is prevalent in wheat in quantities sufficiently large to reduce yield and milling value, the seed should be treated with standard formaldehyde or copper carbonate applications.

ONE of the most important considerations in the profitable growing of winter wheat is the time of seeding. In any one locality there is usually a period of about ten days which may be considered the best time for planting. Greatly delayed seeding results in less stooling, under-developed root systems, greater susceptibility to winter-killing, delayed maturity, greater likelihood of rust damage, and lower yield. On the other hand seasonal conditions must be taken into consideration. In seasons and localities where Hessian Fly promises to be a menace, seeding should be delayed until the arrival of the Hessian Fly free date, as established by Governmental agencies charged with this responsibility. Great losses may

often be avoided by the exercise of due precautions in such matters.

After the crop has been grown its market value will vary with its quality. Harvest operations should be planned so that the least possible grain damage will be incurred.

H. E. *Young*

Secretary,
Illinois Farmers' Institute

PROFIT in wheat growing depends more largely upon yield per acre and relative cost of production, than upon market conditions. Occasionally high prices may enable a farmer to make a profit from an ordinary, or below-the-average, crop of wheat, but year in and year out, only the man who produces a maximum yield per acre is assured of profitable returns. High yields usually net the grower a profit, and no single factor in wheat growing contributes more largely to profitable crops than the proper preparation of the seed bed.

The ideal seed bed for wheat is mellow above and solid below, with moisture close to the surface and all parts of the field equally well prepared. It should be fine and well pulverized on top, firm and well packed below. The nearer it can be made like a garden the better. The more uniform the preparation and condition of the soil, the more uniform will be the germination of the seed and the growth of the young plants. An abundance of soil moisture is necessary for the best growth and development of the crop. Proper and timely attention to the making of the seed bed will provide these conditions.

PLOWING is not always the best method of breaking ground for wheat. Unless there has been plenty of rain throughout the season, plowing will likely leave the ground too dry and cloddy. A cloddy seed bed is always undesirable. This condition can best be avoided by not making clods rather than attempting to work them into condition with a clod crusher and harrow. In case the plow is used. plow shallow, just deep enough to allow sufficient depth for seeding. The under soil should not be disturbed more than necessary, as deep tillage tends to increase winter injury from freezing and thawing. About the only need for a plow in preparing a wheat seed bed is to kill weeds, or to cover an excess of stubble from the previous year.

A disk harrow is the best all-round implement for properly preparing a wheat seed bed. Repeated disking will make a fine seed bed of uniform depth without disturbing the lower soil. By lapping the disk one-half the ground is kept level and the soil is well pulverized, the number of diskings depending upon the condition of the field. Such preparation may require more labor than plowing and harrowing, but will invariably produce higher yields and greater net profits at harvest.

EXPERIENCE proves the advantage of preparing wheat ground as early in the season as possible. This means in July or early August, in most winter wheat sections. A very good practice is to seed wheat after oats, using a variety of oats which can be harvested early. Early seed bed preparation prevents the rapid and excessive loss of soil moisture caused by growing vegetation. The disking also conserves soil moisture by stopping evaporation, and opens the surface so that all rainfall is readily and completely absorbed for the use of the crop.

With good seed, treated for smut and planted at a time to avoid the Hessian Fly, it is entirely possible to increase winter wheat yields from 50 to 100 per cent, on ground prepared in this way.

Warehouse Financing

(*From page 27*)

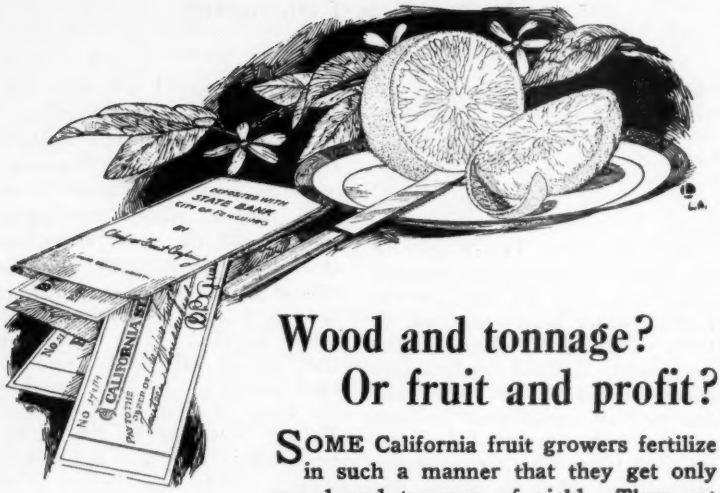
which was usually the case, was to sell on the market. Warehouse receipts of those days were valueless as collateral except in the immediate vicinity where both parties to the transaction were known.

Right here the Department of Agriculture stepped in and brought about the passage in Congress of the United States Warehouse Act, in 1916, which, with its amendments, has proved a veritable revolutionary document for it has taken the financing of agricultural products out of the restricted local class, and has placed it on a nation-wide basis. Still further aiding the farmer, the Agricultural Credits Act of 1923 has opened a larger field of credit than has ever heretofore been available. It is with these federally organized warehouses, largely, that the newly-created cooperative cotton marketing bureaus do their storage business.

The principal value of government supervision over warehousing is that every warehouseman under the Act must, upon request, issue a receipt to the owner in a standard form prescribed. Such a receipt, whether it be negotiable or non-negotiable, must contain a clear statement of the weight, quality, quantity, and the graded classification of the commodity. This receipt at once lifts the financing of the stored product out of the narrow local market and places it on the open money market of the country. The Federal Reserve banks know and recognize these receipts at sight. So does the War Finance Corporation. A local banker need no longer fear a shortage of funds in the crop-moving season for he knows that the rediscount privileges of these big reserve banks are open to such paper—indeed, that they consider it the best kind of collateral.

Not long ago I got into communication with a large number of banks in the agricultural districts and with many warehousemen operating under the United States Act. Almost without exception they voiced the same expression that the liquid credit facilities offered under the Act are a distinct boon to financing operations. Another significant fact came out that, almost without exception, a local banker is now to be found on the board of directors of the local Federal warehouse, and it has further developed that the Federal Reserve banks now decline to rediscount all paper based on commodities stored in a warehouse owned or controlled by the owner of the stored goods. Now that the Federal warehouses are so well established many of the cooperative cotton marketing associations demand that the cotton which they undertake to sell for their clients be stored in such a warehouse, and the War Finance Corporation writes that it has never had occasion to refuse a single application for a loan where the collateral offered was a Federal warehouse receipt.

The fee required for licensing under the Warehouse Act is, in case of cotton, $1.00 for each 1,000 bales capacity. The minimum fee is $5.00. The maximum, $50.00. The amount of the bond required by Uncle Sam is also based on the storage capacity of the warehouse and is at the rate of $5.00 a bale, the minimum being $5,000, the maximum, $50,000. The Bureau of Markets will supply, on application, licensed graders and classifiers. This is not obligatory, however, though most of the warehousemen employ the licensed graders as it is to their advantage to do so. The expense is small and is borne by the depositor of the goods.



Wood and tonnage? Or fruit and profit?

SOME California fruit growers fertilize in such a manner that they get only wood and tonnage of yield. They get lots of fruit, but of a poor grade. Other more careful and farseeing growers fertilize to produce *premium products!* They are not interested in yield alone; they want grade, sugar, shipping quality, color—that's where the money is.

You, too, should look into this matter of fertilization. Find out what your own soil needs. You will need available potash if you are to raise premium products, for it is potash that influences the sugars. Potash also promotes the healthy growth of fleshy fruits.

What makes fruit trees run to wood? What makes sugars, grade and quality? Learn these important money-making facts from the Soil and Crop Service of the Potash Importing Corporation of America. They will gladly help you solve your fertilizer problems on an intelligent and rational basis.

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Genuine German

POTASH

An Orange Grove that Came Back

(*From page 16*)

will become available when needed, at least two months ahead of each of these growths, results became noticeable. Each growth responded to particular or individual feeding, different for each application. During the month of December, 1920, one bale per tree of damaged barley hay was spread on top of the soil with a mixture of commercial fertilizer on top, at the rate of 12 pounds per tree analyzing 8 per cent nitrogen, 8 per cent phosphoric acid, 2 per cent potash, all plowed under and harrowed down. Rains came on, which started a barley cover crop. A dry Spring followed. All the neighbors had to irrigate their cultivated and cover-cropped soil, but on this particular piece with the barley waist-high, there was sufficient moisture to carry the cover crop and trees through without any damage to either through that period. The cover crop was not disturbed—to do so would have disturbed the feeder roots. The deduction from this was that the trees had started feeding, therefore plowing and discing would disturb them.

April 20, 1921, an application of 12 pounds of the same analysis commercial fertilizer was applied on top of the cover crop and all turned under by discing. All this was accomplished after the bloom had set, and it was generally considered that there would not be any fruit under this sort of cultivation at that particular time.

The fall growth of 1921, came on very heavily and to harden this for Winter, an application of 2 pounds per tree of sulfate of potash was made. A fair crop was set and very good fruit wood was in the making, which fruit wood is the most essential thing to produce in order to accomplish desired results, for without new fruit wood each year, the tree will have what we call dieback.

January, 1922, an application of 10 pounds per tree of a high grade tankage analyzing 10 per cent nitrogen, 8 per cent phosphoric acid was applied, with a thorough working of the soil, leaving the soil in a rough condition so as to absorb all the early Spring rains without any working.

April, 1922, the trees appeared to be back in their normal condition and an application of 12 pounds per tree analyzing 5 per cent nitrogen, 8 per cent phosphoric acid, 2 per cent potash, was applied, then 2 pounds of potash applied in August.

The crop picked in the Spring of 1923, was the heaviest of this grove's history, of the finest quality and the returns alone more than justified the cost of the fertilizer program without taking into consideration that the grove became one of the best in the District again.

The most remarkable change and lesson was accomplished on the Sweet trees that had been ordered out. Knowing that this type of tree had been failing in production and color all through the district and wanting to remedy this condition, the trees were not destroyed. They were characteristic of many groves of this variety in this district—defoliated, seemingly nothing but dead wood, yellow and mottled, producing *no* fruit. Certainly not profitable. The above treatment brought them back. They are now better than any other Sweets in the district. The only difference in the fertilizer program between these Sweets and those of the neighbors—it being accepted that fertilizer produced results—was that these particular trees received potash. Today the growers who have not added potash have not corrected their trouble.

(*turn to page 59*)

Film Farming

(*From page 9*)

progressive farmer learns that clean handling of wool, grading and co-operative selling, will bring success in his search for the Golden Fleece.

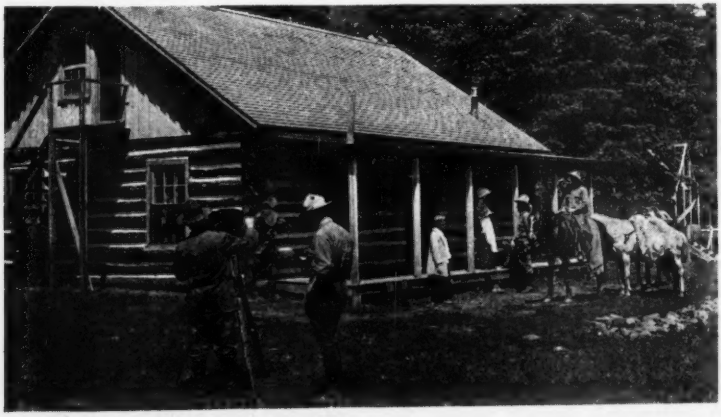
"Sir Lacteus, the Good Milk Knight" is a fantastic story of a little girl, averse to drinking milk, who dreams she is kidnapped by Sir Disease. Her parents appeal to Sir Lacteus, who, aided by his cohorts, Sirs Fat, Sugar, Lime, Protein and Vitamine, defeat Sir Disease's men and rescue the child. Through this fanciful story the food value of milk is emphasized.

"The Charge of the Tick Brigade" is an animated cartoon in which cattle are attacked by ticks with resulting mortality, and Mrs. Tick in an illustrated lecture, thanks cattle owners for not dipping cattle. "Dates" is a picture that shows how determination, applied science, and irrigation water have transformed the desert land of the Southwest into productive date gardens.

Some strikingly beautiful scenic pictures have also been made in connection with the National Forests. "Up to Hyalite," for example, carries the audience through the adventures of a party of tenderfeet in Middle Creek Canyon in the Gallatin National Forest of Montana, and their rescue by Forest Rangers. "She's Wild" is a thrilling picture of bronchobusting, roping and cattle tying. "Cloud-Busting" portrays the adventures of an automobile touring party in the White Mountain National Forest.

EVERY conceivable subject of the more important investigations and studies by the Department have thus been handled for visual presentation. These include methods of controlling hog cholera, cattle ticks and other animal diseases and parasites, the better breeding of livestock, eradication and control of plant diseases and insect pests, game protection, forest fire prevention and control, farm management, and marketing methods.

The main difficulty with the pictures is that the demand for the films is always greater than the supply, but the Department is planning even greater conquests in the future. "Rice, from Paddy to Bowl," for example, shows methods



Doing "Western stuff" on location is all part of the Department's movie work.

of harvesting and handling rice that tend to improve the quality of the product and enhance its market value. Many people in the northern part of the United States believe that all the rice sold at the local grocery store is grown in the Orient. The film shows that last year the United States produced over 22,000,000 bushels of rough rice, which allowed a large quantity for export. The picture was made in the rice fields of the Lower Mississippi Valley and in mills in that region.

Other films now in the making or which are being planned include a picture on the production and uses of turpentine, and how to produce the naval stores without injuring the stand of timber. There will be pictures on methods of combating strawberry diseases and forest insects. The Florida citrus fruit industry will be depicted from the laying out of orchards, types of soil, orchard management, packing house methods and marketing. Another picture will deal with cooperative livestock marketing.

Community cotton standardization that deals with seed selection and grading of the product will be filmed. "There's Magic In It" is the tentative title of a scenario on farm accounts and farm management. The work of boys' and girls' clubs will be shown in another picture. "Rodent Robbers" is the title of a picture on methods of combating prairie dogs. Another film will portray the social aspects of rural life, and still another will show approved methods of farm home management. "Weighed in the Balance" is a milk film dealing with better breeding of dairy cattle.

A drastic censorship has been set up in the motion picture work, so that the pictures will not give racial or religious offense to any group. The Board of Censors is composed of the Secretary of Agriculture, Assistant Secretaries, and Bureau Chiefs. Every presentation of scientific discovery is carefully checked for accuracy; every gesture of the actors and actresses is carefully scrutinized. Custard pie comedies are anathema, as are also the fervid sex dramas of the Nickleodeon.

THIS censorship makes life hard for the movie folks, but the reward is a product that is unexcelled for educational value and story interest. Indeed, the films have been held by leading critics as the best type of educational pictures produced anywhere else in the world.

The Department has found that the showing of films on circuits makes it possible to get the maximum service from the pictures, and therefore favors the organization of circuits over which the films may be distributed. In such circuits county agents, home demonstration agents, club leaders, bureau field men, or any other class of Department or State extension workers may be organized and films may be routed from one to the other. The Department will gladly cooperate with any State agricultural college or other State or Federal institution in arranging such circuits and in preparing programs of films.

An Orange Grove that Came Back

(*From page 57*)

As a caretaker, there was the opportunity to watch results, for fertilization to me at that time was nothing but a difference of opinion. After overcoming so much trouble, so easily, a larger field was entered. Today there are 14 groves totaling 450 acres in various stages of convalescence under my personal supervision, that is, as to their fertilization. I am using potash—2 pounds per tree—each fall.

Why the Grange is Different

(*From page 18*)

the time. That is a part of our living. What the Grange does is to help us do them better, but the special things the Grange does are in helping out all these other projects which make our communities better, our people happier, and our hours outside of our work, more worth while."

I take it as fundamental that the reason the Granges keep on, keep working, keep growing, keep spreading, and keep increasing in prestige and in good repute, is because they deal so largely with the leisure, the outside-of-routine, the social, the recreational, and the educational sides of agricultural life. In the doing of these things, the members of the Grange are really learning to know each other as they are—outside of the dollar environment—and because of this knowledge of each other come the realities of business confidence, when the time arises for business organization for mutual benefit.

I have a map, on which is designated by black dots and other indications, the localities where successful cooperative enterprises are flourishing. I have another map on which by dots and other indications the localities where Granges are flourishing. With a few exceptions, one the great fruit cooperative section of California, the dotted and shaded areas of the two maps almost coincide. But the Granges are thirty and forty and fifty years old. The cooperatives are eight or ten or fifteen years old.

Because I have emphasized the ritual work, the open Bible, the American flag, the order and the secrecy of the Grange, its community work, its emphasis on social recreational and educational lectures, it must not be understood that these exclude definite agricultural work. I have emphasized them because in these things the Grange is different. It does this in addition to doing for farmers, in relation to their own business, all that any organization can safely do, as shown by the history of agriculture in the last half century or more.

WERE I asked in detail to tell why the Grange is like other agricultural organizations, I would recount its experiments and its failures in the field of both cooperative buying and cooperative marketing. The history of the Grange from 1874 to 1880 is a history of spectacular cooperative efforts and failures. Since then those who went through this experience in which most of the dross had been burned out, and the lessons of hard experience learned, remained here and there in groups who still held fast to the fundamental principle of cooperation. These groups began to carry on cooperation, and to do it successfully. I would also recount its efforts to benefit agriculture by legislative expedients and remedies, and the record made up of the successes and of the failures of these efforts. I would tell of the participation of Granges in politics, usually resulting in the death of the organization so entangled, whether local or state. All farm organizations have done these things. But then I would tell of the wisdom born of experience, of the careful legislative programs worked out with deliberation and long and wise counsel, of tried and tested men sent to state capitals, of strong committees sent to the National Capital, and of the long record of achievements for the leveling up of opportunity and of service rendered by government, which has been secured for the farm people, by the Grange leaders, backed by the power of their organization And in this recital I would again move out of the realm of

similarity to other organizations into the realm of differences, and if so minded I could recount so many achievements won by the Grange as to make up a record of service, which has never been equalled by any other organization of farmers in any land, at any time.

In the Grange every woman is the equal of every man, and there are no places in the leadership, or in the rank and file which can not be held by women equally with men. In the Grange every Grange law is sacred, and every national law is sacred, to be obeyed and enforced with equal vigor on every person alike. In the Grange there is no religious sectarianism, and no political partisanship. As an organization it takes no part in either, its members are urged to do their full duty and live up to every obligation to both. In the Grange there is no opposition to or jealousy against any other organization. As a secret order, it protects its own membership and limits it to those who are fit, in the eyes of their neighbors, to take part in its work. There was a time when interest in one legalized business—that of selling alcoholic liquor—barred from membership, and the American public took the example of the Grange to heart, and made this same business a bar to citizenship in our Republic. Above every other demand of the Grange, now stands its demand that this law, which it enforced for a half a century in its own membership, should be enforced by all the people, and that no man guilty of violating this law, no matter how high or humble his position, should escape its penalty.

WE in the Grange believe that in this organization is gathered today the largest, and most representative group of men and women with a common purpose, a common occupation, and a common desire to preserve so far as may be, the traditions of the founders of our Republic, and the honesty and simplicity of life which gave to America its soundest and most enduring foundation, that can be found in any organization. We believe that this organization has made a larger contribution to the maintenance of a sturdy all-American, self respecting, self supporting citizenship in the open country, that has been made by any other group or organization.

With all this in the background, however, I am increasingly conscious of the difficulties of upholding agricultural life, and agricultural pursuits, and the life of the farm people, on a ground of equality with those in other environments. There are many, and very grave problems to be met and solved if agriculture is to remain free and equal. There are more, and graver problems to be met by the rest of our nation, if agriculture does not remain free and equal. For this, and for other reasons, the Grange welcomes help in meeting the task, points out the breadth of opportunity for other organizations to come in, opens its store of history and experience to guide others as far as may be, away from pitfalls, and into safe pathways.

THE Declaration of Purposes, adopted in 1873 says:

"We propose meeting together, talking together, working together, buying together, selling together, and in general, acting together for our mutual protection, and advancement, as occasions may require.

"We wage no aggressive warfare against any other interests whatever. On the contrary, all our acts, and all our efforts, so far as business is concerned, are not only for the benefit of the producer and consumer, but also for all other interests that tend to bring these two parties into speedy and economical contact. Hence we hold that transportation companies of every kind are necessary to our success, that their

interests are intimately connected with our interests, and harmonious action is mutually advantageous, keeping in view the first sentence in our Declaration of Principles of Action, that 'individual happiness depends upon general prosperity.' "

In opening its Legislative Headquarters in Washington, by resolution adopted by the National Grange in November, 1918, the following instructions were adopted, and still govern the conduct of this office:

"Said headquarters may, and in our opinion should, cooperate with other farmers' organizations in support of such policies or measures as may be mutually agreed upon."

Perhaps in this too, The Grange is different.

System

(*From page 6*)

town, or take a chance that I will meet him coming back?"

The first is a decision—magnus; the second a decision—infantus; but unless some system guides our analysis, selection and rejection in each case, we will find that we have acted on hunch, hallucination or habit, and having acted must hastily seek a reason to justify our jump.

A SYSTEM is first aid to time conservation. Where the disposal of time is left to chance, a day is chaos, and life a labyrinth of wasted hours. System is order, and order is next to cleanliness, and you can go on from that.

That man who plans his day, his week, his month, his life uses time as a measure, and having measured follows the schedule through a busy life to success. We use time as a measure—a yard stick of eternity—but without this cutting of time into sections it would still go on. A dog displays no anxiety about the passage of hours, he measures not the position of the sun; but we are men, and must plan and systematize.

A system moves forward, but it must encompass possible retreats—it must be inflexible, and yet flexible enough to allow for emergencies. Napoleon spent one hour systematizing his plan for advancing; four hours carefully studying his retreats; but both were systems, and were carried out.

Individuals need system.

Start with the things nearest you. Begin by overcoming the general cussedness of inanimate things. For years I walked to my dresser for my shoe-horn; now it hangs on a screw-eye on the wall near where I dress. It saves a minute and two ruble's worth of energy. A small saving, but of what are hours made if not of minutes? I drop a collar button—there are six more at hand—find it tonight when time is not so precious.

From systems of this nature, branch off into larger things; what you learn of self-control, minute saving and order in kindergarten will help you in the University of Hard Knocks.

Go to the planets, thou sluggard! Learn order, control, system. And work the system as carefully, as steadily as uniformly as the sun and moon and earth uncomplainingly revolve in their planned orbits.

The universe is saturated in system, all of which is proof enough that we, too, should plan our days, our life and our accomplishments according to a system and a schedule.

Blue print your activities, brother, and when we're both rich let's go to the South Sea Isles, and live in peace and comfort, a million miles from the nearest card index file!

The Unseen Factor

(*From page 7*)

anything else to do." One's natural reaction is that people ought to have greater confidence in their business and themselves so that they can go calmly on, indifferent to the banter and ridicule of unthinking people, but the facts are that most people are not indifferent. Many are not well enough grounded in science to go about their business with confidence that no matter who laughs now, they will laugh last. Of course, some are going forward with the courage of their convictions in spite of an unfavorable spirit, but for the greatest blessing almost everybody in that community should be in the procession of progress. An unfavorable attitude makes the faint-hearted hold back.

This spirit of selfishness affecting the members of a community is not different in effect from a case of exaggerated individuality on the part of the members. Such extreme individuality generally results in a multiplicity of breeds and varieties maintained to the serious disadvantage of all.

The effect of an unfavorable spirit is particularly disastrous with young people and new settlers. "I guess that pretty miss John picked up in the city won't last long when she bumps up against real work out here on the farm," isn't exactly the kind of encouragement (?) that one finds most helpful in trying to get started in a new environment, and "When that chap from Indiana gets that old, run-down farm so that you can raise beans on it he'll be ready for the undertaker," isn't calculated to greatly cheer a man in his stubborn fight against difficulties.

The pity of it is not alone in the failures it helps to make of those not quite strong enough for such an unfavorable atmosphere, but is also on account of the communities themselves that, growing weaker year by year, have so much need of the initiative, the enthusiasm and the enterprise of beginners.

Like all situations, fortunately this one has another side to it. There are communities where the resources of soil, climate, human energy, accumulated capital are supplemented by a fine spirit of cooperation and helpfulness. In such communities big men with outstanding qualities of leadership do not consider their power justifies them in taking advantage of their fellows, but rather imposes an obligation to do a lot of lifting and carrying and encouraging so that everybody in the community may enjoy the largest measure of success possible.

And the attitude of people in such communities is that everything showing promise should be given a fair trial and that they should keep in close touch with the outside world so that ideas may be picked up quickly. Beginners and newcomers are given encouragement and assistance.

THE advantages of such a community cannot be better shown than by the brief story of a visit the writer made to one several years ago. This was a famous Holstein center, from which hundreds of carloads of purebred stock are shipped every year, being distributed to all parts of the United States and even to the far corners of the world. The writer, then a county agent in a neighboring county, worked up an excursion party of over a hundred farmers who went by train and auto into the heart of this purebred livestock area. Here the party was met by fifty farmers with automobiles and conveyed to the hotel and the dining hall where the cordiality and good spirit of the

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community was further demonstrated by the banquet provided and the good words spoken.

Then after dinner the party was divided into six groups and taken by their hosts over six routes to visit a total of over one hundred purebred herds. Here and there along the way the writer witnessed the practical results of this spirit of cooperation. He saw young fellows the victims of unavoidable bad luck kept in the game by a lift given by neighbors who were well established in business. He saw other beginners forging ahead much faster than they could have done in other communities, simply because their neighbors let them have the use of tried sires of breeding that beginners seldom have the advantage of. He learned that when buyers call at a given farm and do not find what they want the farmer takes them to a neighbor who has what he wants. But of all the examples of the advantage of this community spirit, the one that most impressed the writer was the case of the old man who had been induced by one of his neighbors seven years previously to buy a purebred heifer. Many a man has at one time or another owned a purebred heifer, and that is about all that has come of it. But in the favorable environment in which this man lived the heifer became the foundation of a herd of five splendid purebred cows and a thousand dollars' worth of purebred stock had been sold. This is not a big item in the credits and debits of the world nor even of a community, but this case is an illustration of a man who, without initiative, past middle life, and situated on a small farm, found intense satisfaction in his splendid accomplishment. If you please, this man, under the stimulus of the optimistic spirit of this community was a booster and helper where in a non-progressive community he would at best be neutral if not actually a negative influence.

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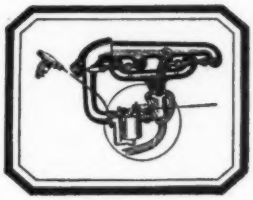

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